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EPIDEMIC CHOLERA.



ALL THE MATERIAL FACTS
IN THE
HISTORY
OF
EPIDEMIC CHOLERA:

BEING
A REPORT
OF THE
COLLEGE OF PHYSICIANS

OF PHILADELPHIA,
TO
THE BOARD OF HEALTH:

AND
A FULL ACCOUNT OF THE CAUSES, POST MORTEM APPEAR-
ANCES, AND TREATMENT OF THE DISEASE.



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TO THE READER.

THE Report of the College of Physicians of Philadelphia, of which the Publisher has obtained the copyright, contains a full but succinct history of the circumstances worthy of note, in regard to the *geographical range and localities of Cholera*, and the *classes of persons* chiefly attacked—as well as abundant and convincing proofs of the *non-contagiousness* of the disease, and of the utter uselessness of quarantine restrictions. It is terminated with clear *Sanitary Precautions*, pointing out the means of prevention, by a rational system of hygiene, adapted to *place, habitation, and person*. The Report contains nearly all that more especially concerns the general reader and public at large; and serves as an appropriate introduction to the work itself. For preparing this, the Publisher was glad to avail himself of the services of Drs. Bell and Condie, the first, the recognized author of the Report; and who had collected much valuable matter on the subject—the second, whose store of facts was very rich, particularly in those obtained from the writings of the German Physicians on Cholera. The result of the joint labours of these gentleman will, the Publisher confidently believes, contain a fuller and more impartial digest of the medical practice in Cholera, and of the symptoms and modifying circumstances, from the appearance of the disease in Bengal in 1817, down to the present time, than any one work which has hitherto been published.

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REPORT, &c.

The Committee of the College of Physicians, appointed to institute an impartial examination into the facts in relation to the Epidemic Cholera, in conformity with a request for information on this subject from the Board of Health, beg leave to

REPORT,

That after frequent meetings, and a free interchange of sentiments among themselves, respecting the manner in which they could best meet the wishes of the Board of Health, and fulfil the duty devolved on them by the College, they have thought that a plain narrative, chiefly consisting of the essential facts connected with the origin and spread of Cholera, would be the most instructive in itself, and furnish the best data for the measures of sanitary precaution with which the Committee close their report. This narrative will be given under the following heads:—

I. The geographical range of Cholera, and the order of succession in which different countries, districts, and cities, have suffered from the disease.

II. The atmospheric and other phenomena preceding and accompanying its prevalence.

III. The localities in which the disease has chiefly prevailed and proved most destructive.

IV. The classes of people, and the modes of living of those who have died in the greatest numbers.

After detailing the chief facts and circumstances under these various heads, the Committee proceed to inquire into the means of preventing the extension, and mitigating the violence of the disease, should it appear amongst us. In this division of the subject, they examine into the reasons of those who had hoped for absolute protection from the disease, by non-intercourse with all places where it was prevailing. The Committee can find no valid cause for such a belief. Their inquiries, hereafter detailed, have satisfied them that all attempts by insulation and non-intercourse, by means of sanitary cordons, and the most rigid quarantine, to exclude the disease, have signally failed in

every country and city in Europe, however well devised and skilfully and energetically executed. The disease has sprung up in the heart of a city, and chosen for its first victims persons who had no intercourse with sickly places or persons. It is further shown that free communication between the sick of Cholera and the healthy, has not endangered the latter, or increased their probabilities of an attack. The Committee conclude their report by a recommendation of such sanitary regulations in reference to place, habitation, and person, as experience has clearly pointed out.

I. Geographical Range, and Order of Succession in which the Cholera made its Attacks in different Countries and Cities.

1. *Geographical Range.*—Most of the historians of Cholera describe it as first showing itself in Jessore, a town 62 miles north-east of Calcutta, about the middle of the month of August, 1817. But it is known that its appearance in this last mentioned city was nearly contemporaneous, nay, some say anterior to its breaking out in Jessore. It is distinctly affirmed in the Bengal Medical Reports, that the disease appeared in the Nuddeah and Mymuni districts in May, 1817, raged extensively in June, and in July reached Dacca. Before the end of November, few towns or villages in an area of several thousand miles escaped an attack. Across the whole extent of the Gangetic Delta, and especially in the tracts bordering the Hoogly and Jellinghy rivers, the mass of the population was sensibly diminished by the pestilence. It is needless to describe minutely in this place the ravages of the Cholera in the various towns and districts of Hindostan. These were in one direction along the Ganges and its tributary streams. Delhi, the ancient capital of that country, on the western bank of the Jumna, was attacked in July, 1818. The disease appeared in Bombay, on the western coast, in August, and in Madras, on the eastern coast of the peninsula, in October, 1818. In Trincomalee, in the island of Ceylon, it was first noticed in December of the same year. Since 1817, Calcutta has been a regular sufferer from Cholera every season. The same remark will apply to Bombay, and with the exception of two years, to Madras.

In 1820, we find the Cholera to have shown itself in Cochin China, Tonquin, and the Philippine Islands, and at the conclusion of the year was in Canton, and the southern part of China Proper. Peking, the capital, was assailed in successive years,

and in Chinese Tartary, Cholera appeared at two different times, with a considerable period intervening. In the island of Java, it broke out in April, 1821, and in the Molucca Islands, and in Canton for the second time, in 1823. In July, 1821, it showed itself at Muscat on the southern end of the Persian Gulf, and in the same year at Bassorah and Bagdad. Persia has been subjected to its ravages five different times from 1821 to 1830. In 1822, the disease was raging in Mesopotamia and Syria, having appeared as far west as Tripoli, on the shore of the Mediterranean Sea, and in the year 1824, at Tiberias, in Judea, on the same coast.

In September, 1823, the disease showed itself in Astracan, a large and populous town at the mouth of the Volga, on the northern shore of the Caspian Sea. But it soon subsided here, and did not break out again in any part of the Russian Empire until the close of the year 1829, when the town of Orenberg was attacked. On the last of July, 1830, it again appeared in Astracan, in which city and province the mortality was this time excessive. Near the close of September, of the same year, it was announced as prevailing in Moscow, and in June, 1831, in St. Petersburg and Archangel. Riga and Dantzic had begun to suffer from the pestilence in May of the same year. Its presence was discovered among the wounded and prisoners, who had been conducted to Praga, a suburb of Warsaw, but separated from that city by the Vistula. On the same day it appeared in the Polish army, after the battle of Inganie. Hungary was the theatre of its operations in August, of the same year (1831). In Berlin and Prussia it appeared in August, in Vienna in September, and in Hamburg, in October, of that year.

The first place attacked in England by the Cholera, was Sunderland, a sea-port town in the county of Durham. The disease had appeared there as early as August, 1831, but did not engage general attention or excite alarm, until the latter part of the year. Since then, it has manifested itself in Newcastle-upon-Tyne, and many other contiguous places in the north of England; and in Haddington, Edinburgh, Glasgow, and other towns in Scotland. It showed itself in London during the last winter, and in the spring in Dublin, Belfast, Cork, and other places in Ireland. In the early part of April, its presence was announced in Paris, and since then it has appeared not only in the small towns around that capital, but in many other places in France.

2. *Order of Succession in which different Countries and Districts have suffered from Cholera.*—The disease during the year 1817, that in which it first appeared in many different parts of Bengal, was mainly restricted to this province. It ceased to prevail any where on the approach of winter of that year. Up to this time the most southerly point along the coast, stretching to the south and west, which was attacked, was Cuttack, and that to the north and east, (taking Calcutta as the centre) was Silhet.

In the following year, 1818, the order of succession was remarkably regular—a month interval for every degree of latitude. Ganjam, which is in 19° and some miles, north latitude, was attacked on the 20th March; and Madras, in north latitude, 13° , October 8th. This was the rate during the dry season, and when there was no interference with the constant commercial intercourse which prevails on the Coromandel Coast. From Madras south, the order of succession was in an accelerated degree. It is worthy of remark here, that for two months, beginning on the 10th of October, the port of Madras is annually closed, and in consequence of the prevailing winds, and of the surf, which, during this period breaks upon the whole of that open coast, every vessel is forced to leave it, and the small trading vessels are drawn high and dry on land. Yet still, as just remarked, the places to the south were assailed by the disease even in more rapid succession than those to the north of this city.

Not very dissimilar was the order of succession in which places in the interior of the peninsula were attacked—so that the disease appeared nearly simultaneously at the sea-port of Madras, and in places on parallel latitudes, in the interior. At Masulipatam, a town on the Coromandel Coast, and situated near the mouth of the Kistna river, the disease showed itself on the 10th July, 1818; and at Punderpoor, on one of the head branches of this river, in a W. N. W. direction, and distant some hundred miles, it appeared on the 14th of the same month, while intervening places were affected at a later period. Bellary, in the centre of the peninsula, in latitude 15° , was attacked on the 8th September. Nellore, on the eastern coast, was first a sufferer, on the 20th of the same month—so that we can not conceive of any direct progression of the disease, or of any substantive cause of it passing from the coast to the interior, nor from the interior to the coast. The long interval also between the appearance of the disease at Cuttack, by the last of September,

1817, and at Ganjam on the 20th of March, 1818, forbids our supposing the transmission of any known substantive cause of the disease from one of these places to the other—both being situated on the coast, and within a moderate distance of each other. Aska, near Ganjam, in the interior, and on the main route south-west from Cuttack, was not visited by the disease till the 23d April, 1818.

In China, we find that the disease one season attacked places in succession in a south-easterly direction from Tartary to Peking, and at another time assailed them in a north-west course from Canton to Peking. Persia was attacked in different years by Cholera, and the order of succession and direction not regular. From Bassorah on the head of the Persian Gulf, through Mesopotamia to Aleppo, and along the coast of Syria to Damascus, the direction was north-west—but the attacks were not in any very marked order—the period between its being in Bassorah and in Damascus, was four years. A caravan would traverse the same space in nearly as many months. Egypt, contiguous to Syria, and holding regular intercourse with it both by sea and land, did not suffer from the Cholera until eight years after its appearance in Antioch and Tripoli, a Syrian sea-port, and nine after its attacking Aleppo.

During the month of May, 1831, the Cholera broke out in Mecca and other places in Arabia, and in the month of August in Cairo and Alexandria, in Egypt. The disease was in Astracan, at the mouth of the Volga, on the Caspian Sea, in September, 1823. No places to the north and west were sufferers from the disease either on this or the following years, until the month of July, 1830, when it reappeared in Astracan. From this time, until the beginning of winter, a great portion of Russia in Europe was attacked with Cholera; but in following a given line from Astracan, along the banks of the Volga, in a north-west course, we cannot find any regular order of succession of attacks of towns and villages. Thus, Astracan, at the mouth of the river, was, as we have seen, the seat of the pestilence in July, 1830. Saratov, higher up, and Novgorod, some hundred miles still farther up the stream, suffered in August of the same year, while Samara, situated between them on the Volga, had no Cholera all October. Asof, at the mouth of the Don, was attacked in October, whilst the region of country to the north and west, and on as far as Moscow, suffered from the disease in September. Kiow, on the Dnieper, felt its ravages in October, 1830, whilst Brody, on the south-west, had not the

disease until May, 1831. On the Baltic, we meet with similar irregularities. In Riga, the disease prevailed in May; in Mitau, to the south, in June; in Liebau, more southerly, in May; and in Polangen, still farther south along the same line of coast, in June. If, again, we take a city on the extreme eastern boundary, as Orenberg, for example, we discover that the disease prevailed there in September, 1829, and a year elapsed before places on the great roads, to the west or interior of the empire, were affected. Archangel and St. Petersburg, the first on the White Sea, the second on the Gulf of Finland, were both the seats of the disease in the same month, (June) 1831, while Valogda, directly in the line of water or commercial communication, was a sufferer in September of the year before, or 1830.

The Cholera appeared in Warsaw in April; in Dantzic in May; in Pest, (Hungary) on the Danube, in July; in Vienna, higher up the river, in September. In Berlin, it broke out in the last of August; whilst Thorn, more to the east, and holding direct intercourse with Warsaw and Dantzic, escaped. In Hamburg it appeared in October. Whatever line we may assume, we cannot observe any regular order of succession in which the different cities were attacked—either along rivers, or on the great high roads between capital cities. In Russia, Prussia, and Austria, where the greatest efforts were made to set limits to the disease by sanitary cordons, and the most rigid system of quarantine, the periods between the attacks of cities and districts, were not any longer than in India, where the most unrestrained intercourse by sea, and along the rivers and roads, was allowed. Any line by which we should pretend to mark the places attacked by the Cholera, must be very irregular—sometimes approaching a town or village, and then passing round it—to return after the lapse of weeks or even months. Sometimes the disease would nearly depopulate small villages near a principal station, before it made its appearance there. It is worthy of remark, that at the very time when the western part of Russia and Poland, and parts of Germany, were suffering from the Cholera, it raged with great violence in Arabia and Egypt.

Perhaps we could not cite a stronger example of the difficulty of explaining by any known law of transmission or order of succession, an attack of Cholera, than its sudden appearance in the heart of Paris—the first city in France to suffer from the pestilence.

The annals of Cholera prove that when it made its appear-

ance in a camp or a city, far from extending to every habitation, it was almost invariably confined to particular portions of even the most populous places. Sometimes in an army, for instance, one or two regiments encamped together, or separated by other corps, were the only sufferers in an attack of the disease; one division in one street only of a town, had the disease existing in it—nay, its presence has been known to be limited to one side of a market place. Removing a camp a few miles, has frequently put an entire and immediate stop to the occurrence of new cases; and when the disease prevailed destructively in a village, the natives often got rid of it by deserting their houses for a time, though, in so doing, they necessarily exposed themselves to many discomforts, which would commonly be considered as exciting causes of disease.

It has been said, that the course in which the Cholera has successively appeared, has been westwardly. This is an error, if we have regard to the chronological order in which it has made its attacks, or assume any place as a point or beginning, from which the disease may have been supposed to diverge. Thus, in the year 1823, we find the Cholera to have shown itself as many degrees eastward of Calcutta—viz. the islands of Banda and Timor—as it had done westward, or on the shores of Syria and Judea—Nor has the line of its progress been either north-west or north-east.

II. Atmospheric and other Phenomena anterior to and contemporaneous with the prevalence of the Disease.

Many of the British physicians and surgeons in India, describe frequent and great deviations from the usual order of the seasons, before and during the existence of Cholera; and they speak of unusually violent thunder storms, “violent squalls,” and storms of wind and rain. Earthquakes were also felt in various parts of Hindostan. At the time when the grand army under the Marquis of Hastings suffered so dreadfully from the disease, the thermometer ranged from 90 to 100°—the heat was moist and suffocating, and the atmosphere a dead calm.

The origin of the disease at Calcutta has been attributed to the extreme heat and drought of the season, followed by heavy rains, and the use of unwholesome food, viz: bad sable fish and ouze, or new rice. In the island of Java the weather, when the Cholera broke out, (April) was represented as unusually dry and hot.

At Bombay the fall of rain was unusually great in August, 1818, in the latter part of which month the disease broke out. The same remark was made of the weather at Madras. It was observed that the different attacks of the epidemic in General Smith's force at Seroor, and other places, were *always* accompanied by a cloudy, overcast state of the sky, sudden showers, composed of large drops of rain, resembling those of a thunder storm, and a thick, "heavy" state of the air, giving it a whitish appearance; and whenever the weather cleared up, the disease disappeared. The person (an intelligent officer) who makes the above remarks, also observed that the disease was invariably preceded and accompanied by a large black cloud hanging over the place; and added, that this had been universally remarked, and that the appearance had even received the name of the *Cholera cloud*.

Similar notices abound of the connexion between the disturbed state of the weather and the appearance of the disease in various parts of India. It was also a subject of very general remark, that the prevalence of southerly and easterly winds, seemed to give vigour and force to the disease, while a change to the north and west, and a dry and pure atmosphere, it almost uniformly subsided. However aggravated the disease was in the summer months, or rather from spring to the beginning of winter, it was most generally quiescent in this latter season, in India.

It would seem, however, that of all the atmospherical phenomena, which have been alleged to accompany the disease, none are universally present, except those which indicate a diminution in the density of the air, and a *tendency* to rain and storms. In other words, the atmosphere, during the prevalence of the disease, is in a rarefied state; and exhibits a great tendency to part with its moisture, forming thick clouds, heavy rain, or haziness; and to become agitated by storms. It has been further said, but not generally confirmed, that the meteorological occurrences which have been observed to accompany the disease, are either produced by, or attended with, a diminution of the quantity of free electric fluid in the atmosphere.

The influence of season on the appearance and virulence of the disease in Persia and Turkey is thought to be as evident as in India; for we learn, that during the three years, in which it prevailed in succession at various places from the shores of the Persian Gulf to the Mediterranean, in one direction, and to

the borders of Russia in Europe, in the other, it prevailed *only in summer*.

The weather, before the breaking out of the Cholera in Mecca, (in 1831) was remarkable for the excessive heat—the thermometer being steadily as high as 102° F., and afterwards heavy rains, with the wind from the south and south-east.

Before the appearance of the disease in Suez, a very hot south wind prevailed.

At Cairo, during the first period of the disease, the wind was from the north-east, and the heat, during the day, suffocating.

At Nishni Novogorod in Russia, there suddenly succeeded to a warm and dry state of the atmosphere, in the month of August, 1830, a continuance of cold and wet. At this time the Cholera began. Prevailing winds south-east.

The Cholera appeared in Riga at the commencement of uncommonly hot and sultry weather.

In Poland the Cholera increased as the weather in March and April became cooler and more damp.—With warmth and dryness of the air the disease rapidly abated. When, however, in August and September the days became very hot, and the nights cold, it again raged to an alarming extent.

The prevalence of the disease at Moscow is stated to have been in proportion to the humidity of the atmosphere.

At Vienna the Cholera broke out on the 13th of September, after a hurricane and much cold rain.

At Dantzic so irregular and unfavourable to health had been the weather of the spring, that pestilential diseases were expected as a consequence.

The prevalent winds, in most places in which the Cholera committed its ravages, have been easterly, from N. E. to S. E. Such winds, be it remembered, have almost invariably preceded and accompanied some of the worst pestilences and various fevers—such as plagues, yellow fever, and violent bilious and intermittent fevers.

Among the phenomena worthy of record connected with the history of Cholera, is the sickness and mortality of animals antecedent to and at the time of the ravages of the disease, in many parts of the world, where it prevailed.

III. Localities of Cholera.

IN INDIA.

Jessore—where the Cholera first attracted general notice by its unusual virulence, is a crowded, ill-ventilated place, surrounded by a thick jungle, and exposed, during the rains, to the effluvia of an immense quantity of stagnant water. The district of which it is the capital, in its southern quarter is composed of the “Sunderbunds,” a name given to the numerous, low, marshy islands, contained in the Delta of the Ganges, and formed by the different channels through which that river travels to the ocean. The Sunderbunds are overgrown with wood, and inhabited only by tigers, reptiles, and such other denizens of the wilderness.

Calcutta.—In the official notification of the existence of malignant Cholera, forwarded 15th September, 1817, from the chief magistrate of the city to the government, it was stated that the disease was raging with extreme violence, particularly in the poor and unhealthy districts of the town and suburbs. Here, truly, the scene was deplorable. To convey an idea of the complicated wretchedness of the lower classes of Hindoos and Mussulmans at this period, it will be necessary to speak of their habits and places of abode. The “City of Palaces” forms only one (the English) half of the city of Calcutta; the other is the native town, which contains, in connexion with the suburbs, at least 500,000 inhabitants. The native town is chiefly composed of miserable lanes, narrow, dirty, and unpaved; and the majority of the dwellings are low huts, with side walls built of mud, mats, and bamboos, and covered with small tiles. Amongst the swarming population of these filthy receptacles, in which all descriptions of disgusting animal and vegetable odours abound, the distemper ran a long and wide career of destruction. Barely existing on a meagre diet of bad rice, the poor workmen, who had been abroad all day pursuing their laborious avocations in the sun, returned to their hovels in the most fitting state of body to contract the disease. Exhausted by the heat and fatigue, and confined during the night with their families, often six or eight in number, in a small space, to which fresh air was a stranger, they were attacked by Cholera in hundreds; and a frightful proportion of those attacked, were swept away in the lapse of a few hours. This was more

especially the case in the lowest part of the town and suburbs; and in the adjacent villages of Kidderpore, Manicktolla, Entally, Chitpore, Sealdah, &c. The condition, indeed, of the inhabitants of the latter places, is hardly to be imagined.—These villages are made up of mud or straw huts, which are individually from six to twelve feet square, and so huddled together that there is scarcely room to pass between. In each of these unhealthy habitations a whole family resides, and not unfrequently, cows and other domestic animals are added to the proper inmates. These dependencies, moreover, are everywhere intersected by pools, broad ditches, and channels, which, in the rainy season become the reservoirs of foul water and corrupt weeds.

Bombay.—Cold and moisture were strong predisposing causes. In the Kamati village which lies low, and is surrounded, during the rains, with water, the inhabitants are chiefly Hamauls, who are much exposed, both day and night. Among these people the disease was most rapid in its progress, and, in proportion, was attended with the greatest mortality. Among the better classes many individuals were also attacked, but a very small proportion has died, when assistance was timely procured.

Of the two native corps, one, newly raised men, deficient in clothing and comforts, suffered most.

The disease first appeared in a lane.

Madrás.—Certain local circumstances and a peculiar state of the weather appeared to have a considerable influence in occasioning the variations in the disease:—dry, clean, open situations were obviously the most healthy; while moist filthy situations, and such as were inhabited by the poorer classes, generally presented a great number of sick, and those frequently of a bad description. This was well illustrated at Vipery, in a situation abounding with stagnant water, the receptacle of every species of filth, but more especially at the spot, where it was strongly suspected the epidemic first broke out at Madras, and where many fell victims to its severity. For, it was observed to be more prevalent amongst, and, indeed, for the first two or three days, almost exclusively confined to, the natives residing in some huts, about which, much offensive and corrupted matter had been accumulated, while those occupying the houses almost contiguous, suffered but slightly, though comparatively more than the inhabitants in the adjacent and

more distant streets. Damp and exposure are said to have been influential causes.

During the prevalence of the cholera in the 89th regiment in Fort St. George, in February, 1828, it was entirely confined to one end of the barracks; the three companies occupying the upper floor of the north end were the only sufferers: finding the disease to be daily increasing in these companies, they were removed to a bomb-proof, and it was observed after this not a single case occurred. The sickly end of the barracks was contiguous to the ditch of the fort, as also the men's privies and cooking houses, and to a drain, running immediately under the north-western angle, which at times is exceedingly offensive. Another modifying cause was the exposed situation of the barracks to the keen north-west (land) winds scouring along the glacis and directly into the rooms in question, about three o'clock in the morning, after a hot and sultry night, the men being often naked and exhausted by the previous heat.

In the march of the 1st and 8th Light Cavalry to Seroor, during the months of February, March, April, and May, the surgeon says he had occasion to observe the necessity of attention to choosing high ground, at a distance from water, for encampment. "No case of Cholera appeared, he says, in camp, until our arrival within a few marches of Chittledung, when unfortunately having pitched on the banks of a mullah containing a large quantity of stagnant water, it was lamentable to observe, that in a few hours from the time of our arrival, no less than fourteen cases of sepoy's were admitted into the hospital, suffering from the spasmodic Cholera in its gravest form. I took an opportunity of remarking to the officer commanding, the probability of the disaster having been occasioned by the encampment in the situation above described, and I have the satisfaction of observing that much attention being subsequently paid to this in particular, the disease in a few days suddenly left the camp, and not three cases occurred afterwards in a march of two months."

In a large camp in Candeish, one corps at the *left* of the line was found to suffer extremely from the disease, whilst that which was at the *opposite extremity* entirely escaped. The *former* was in a lower and more confined situation than the other, the *latter* being situated between two hills where there was a strong current of air. The corps, which escaped, having marched, another corps arrived and took its place, and enjoyed the same immunity, the epidemic still existing in other parts of the camp.

And that the exemption was not owing to want of susceptibility was proved, at least in one instance; for the first of these corps suffered very severely on its march after leaving the station. The 53d regiment was stationed in an airy and rather high situation at Trichinopoly when the disease appeared: they did not escape, but they were attacked the last. It first appeared at Masulipatam among convicts in a *bomb-proof*, (a chamber like a cave in the ramparts,) and was for some time confined to that chamber before it appeared in the rest. *It was different from that of the other bomb-proofs, in being ill-ventilated, crowded, and extremely damp.* Throughout it furnished more cases than the others. Some further time elapsed before the disease spread to the free population. Other prisoners in a dry and commodious jail, at the same time, suffered much less.

Two parties of European recruits arriving at Madras, one is sent into bomb-proofs in the fort, and the other into barracks at the Mount, eight miles off. The *former* is attacked whilst the *latter* remains free, and on being also sent to the Mount, has no more cases. A corps encamped on low ground in very rainy weather, was severely visited; of thirteen sepoy taken ill, six died. After a few days they moved to a higher spot, and *only one more case* occurs, which appears on the march to the new ground. During an attack of the epidemic, experienced in April, 1823, by the 69th regiment in quarters, at the suggestion of the surgeon, the wing of the corps in which the disease prevailed the most, was encamped on a piece of high ground in the neighbourhood, and he reports that *not a case occurred in that camp.* The reappearance of the disease at Palamcotta is thus spoken of—"It commenced its ravages to the north-east of the fort, and spread pretty generally through the small, low, dirty, and close houses in every direction. The hospital escaped its influence, probably because it stood on high ground, and was very open all round, for certainly none of the sick, though upwards of ninety, were attacked. Only one person in the hospital was attacked, and he was in the habit of absenting himself from it at night."

In reference to the disease as it prevailed in the centre division of the British army in India, in the year 1818, we learn, that in the three grounds of encampment, the soil was low and moist, the water foul, stagnant, and of brackish quality, and every where not more than two or three feet from the surface of the earth, and the vicinity abounded in animal and vegetable putrefied matter; whereas, at Erich, where the army regained its health, the situation was high and salubrious, and the water

clear and pure from a running stream. As illustrating the differences in locality, it may be well to add, the disease, though prevailing so fatally in the camp, did not reach Allahabad for four months afterwards, and yet the intercourse between this town and the camp was very great. Even some corps of the division, stationed at a little distance, escaped, though a diseased party arrived among them from the main body.

From the uniform result of queries sent round to the police officers of the different departments, it appeared that the villages in Sylhet, in which Cholera raged most extensively, were considered by the natives as comparatively unhealthy, and obnoxious to intermittent fevers.

Seringapatam is one of the most unhealthy spots in India: it lies in a basin formed on all sides by hills, and is surrounded to a considerable distance by rice fields, watered by canals drawn from the Cauvery river. The proportionate mortality from Cholera was greater here than at any other place in the peninsula.

In *Nudea*, high and dry places, and upper-roomed houses, were more free than low and marshy spots covered with luxuriant vegetation. In the barracks of the European regiment at Berhampore, of twenty-four casualties, seventeen took place in two companies inhabiting the lower range. Similar results have been observed in reference to remittent fevers in more northern climates. Pringle tells us of the number of sick among the troops in Fländers, quartered on the ground floor, whereas those in the upper stories escaped.

IN PERSIA.

Tabriz.—The disease, says Mr. Cormick, first began in that part of the city which is most low, filthy, and crowded with poor inhabitants, and advanced from quarter to quarter of it, finishing its ravages in one before it commenced them in another. It was most destructive in the houses which were low and possessed most inhabitants.

IN RUSSIA.

Moscow.—The greatest number of deaths occurred in the marshy sections of Moscow, bordering on the Moskwa and Kanal. These rivers frequently overflow to such a degree that the

water reaches the lower windows of the houses in the neighbourhood.

St. Petersburg.—The situation of St. Petersburg, on marshy and made ground, would prepare us for the appearance of the disease, in those parts especially where the houses were crowded in narrow, ill-cleansed, and ill-ventilated streets. But there is a curious fact connected with locality in the history of the Cholera in that city, which deserves mention here. Kristofsky island, situated in the middle of the populous islands of St. Petersburg, and which communicates with them by two magnificent bridges, and with the town by a thousand barges, which bring every day, and especially on Sundays, a great many people, who go to take a walk in that charming place. Kristofsky island, we say, was completely preserved from the reach of Cholera: there has not been a *single* patient in the three villages which it contains. It is not to be supposed that the inhabitants of those villages were of a different nature from those of the town: all the abodes of this island are country houses, empty in winter, and full of people in summer, either noblemen, artists, or citizens of the town. During the prevalence of the Cholera in St. Petersburg, almost all the French players retired to Kristofsky, and not a single patient was found amongst them; while out of the small number of their companions who remained in town, many either died from the disease, or were seized with its most violent form. The salubrity of this spot has been said to be owing to the many neighbouring woods by which it was protected from the choleric influence, whatever that may be, or however mixed with the atmosphere.—“The island is a low and damp one, exposed every night to cold and heavy fogs, and fouled every Sunday by the excess of people who go there to gorge themselves with intoxicating liquors.” It is, however, important to bear in mind, that owing to its being a summer retreat, the better class only of the population may be presumed chiefly to inhabit it—nor are they crowded or penned up together, as in many other parts of a populous city, in which persons spend both day and night, and in which the air is deteriorated, not only by secretions and exhalations from their bodies, but from various manufactories.

In the lowest part of the basin surrounding the Caspian sea, and which is three hundred and forty feet below the level of the ocean, the Cholera spread itself after it appeared in Astracan, that is in the east and south-east parts of European Russia.

Nishni Novogorod is on the right banks of the two rivers

Oha and Volga, which are here steep—two hundred feet in height. The land on the left banks of both rivers stretches out low, sandy, and is at times overflowed, presenting, in fine, extensive flats.

In what, *à priori*, would seem to be favourable healthy localities, as *Orenberg*, the disease committed fewer ravages. Out of a population of 21,000 inhabitants, there were two hundred deaths.* The people, however, pay little attention to cleanliness and salubrity of dwelling.

We ought not in considering the predisposing causes or modifying circumstances under which the disease has occurred in Russia, to forget that the inhabitants, especially of the lower classes, live in close rooms, raised by stoves to a tropical heat but without a tropical ventilation. The air is not renewed in the houses and ultimately becomes pestilential.

IN POLAND.

At *Warsaw* the habitations of the lower classes, who were the chief sufferers from the disease, are very dirty, and are but poorly ventilated or not at all; they are situated principally on the borders of the *Vistula*, and are in fact mere drains; hence it is in this part and in the low and narrow streets that sickness and death are most frequent.

IN PRUSSIA.

Berlin.—The greater number of sufferers from the disease lived in obscure streets, almost inaccessible to either the sun's rays or to the winds, and in low, damp, and often filthy dwellings; whereas, airy dwellings, in which cleanliness was attended to, remained free from attacks. Entire quarters, such as *Friedrichstad*, on account of their spacious and well-aired houses and streets, well-ventilated by currents of air, were, with a few exceptions, preserved from the pestilence, and even these exceptions occurred only in the back buildings.

In *Berlin* the first cases of Cholera appeared among the skippers in the boats lying on the river *Spree*, which flows through the town, and in houses in the immediate vicinity of the river. In general the streets of *Berlin* are wide and airy, and the poorer classes of the population, in place of being pent up in interme-

* *Tripoli*, in *Syria*, represented as clean and well ventilated, lost but five persons out of a population of 15,000.

diate alleys and confined courts, occupy the suburbs. Berlin suffered comparatively little from the disease.

Vienna.—The locality of the disease was the same as in other places, but the class of people different. The nobility reside in the old and low part of the city, near the Danube, and on the first floors of the houses: they suffered greatly.

Hamburg is situated on the Elbe, and part of the city is built on islands formed by the divisions of the river. At high tide the banks of the river are frequently overflowed. There are no less than eighteen hundred cellars inhabited by families—these are at times overflowed. There are also a great number of small damp courts and alleys inhabited by the poor, into which the sun seldom penetrates. The Cholera first appeared in what was called *the deep cellar*, among the lowest and most destitute class of paupers, at a time when the sanitary cordons and rigid quarantine restrictions were imposed to prevent its introduction from Prussia.

In *Breslau*, the capital of Silesia, the disease was first seen in the faubourg of the Oder, a very damp place, intersected by marshes and stagnant water, and where intermittents of the worst kind prevailed.

IN GREAT BRITAIN.

The southern part of *Sunderland*, in which the disease began, and prevailed to the greatest extent, consists of streets which are mostly narrow passages, crowded with the thickly populated houses of the poor, badly paved, with a gutter in the centre, where all the filth of human habitations is heedlessly thrown, and still more carelessly left to accumulate for weeks together, upon the town moor.

The needy, filthy, ragged, starving, crowded population of the worst parts of Newcastle, Gateshead, and Glasgow, the inhabitants of the lanes of Rotherhithe, St. Giles's, Chelsea, St. Maryle-bonne, in London, these it is who hitherto mainly suffered in Great Britain. It has been said, on the same authority, that, as far as London is concerned, the banks of the Thames are the throne and seat of Cholera.

In *Paris*, the first appearance of the malady was among the wretched poor of the Isle de Cité, a small island formed by a division of the Seine—the streets are on made ground, and the houses crowded and ill-ventilated.

IV. The Classes of People, and the Mode of Living of those who have died in the greatest numbers.

Of all the circumstances predisposing to an attack of Cholera, say the East India surgeons, fatigue consequent to travelling, or to hard work in the open air, was the most powerful. Accordingly, we find that troops upon the line of march, and people whose occupations exposed them to the weather—as boatmen, fishermen, husbandmen, gardeners, grass-cutters, washermen, palankeen-bearers—were extremely subject to the disease.

In India, the Cholera attacked the various classes of the inhabitants to a greater or less extent, according as they were more or less exposed to fatigue, and irregular modes of life. The Europeans suffered less comparatively, than the natives; and of these, the higher less than the lower classes. Women suffered less than men, and children in a less degree than either—of 481 deaths in eleven days in Bombay, 254 were of males, 172 of females, and 55 of children.

In Europe, and especially England, these proportions will not hold; the females in some places suffering as much as the males.

In the north of India, the Mohammedans used a more nutritious diet, and went better clothed than the Hindoos; and in general, they were less liable to the malady. That this did not depend upon the stronger constitutions of the former, is seen in the effect which succeeded to a temporary exhaustion. When the Cholera prevailed at Delhi, it happened to be the period of the year in which the Mohammedans observe their annual fast of the Ramazan. During this time all orthodox Mussulmans abstain from food while the sun is above the horizon. Persons of this sect, therefore, suffered more extensively during the fast than the Hindoos, who lived after their ordinary manner. At Calcutta many of the workmen suffered, not in the ratio of their constitutional strength, but according to their temporary exhaustion. The mechanics working in the open dock-yards receive high wages, and live in a superior manner with regard to diet and other domestic comforts; yet they were more frequently seized than the day labourers of the poorest order, employed under shelter in the cotton screws.

In Madras it was observed that very few of the lower castes escaped, who were given to intoxication, and slept exposed to the night air.

It has been justly remarked of the causes of the disease at Bombay, that fatigue, poor diet, bad clothing, and exposure to cold and moisture, particularly predispose to an attack. In that city, Cholera was nearly restricted to the class of the population which is most exposed to the severest labour and privation, and who are often obliged, not being possessed of a cot, to sleep on a mud floor, with scarcely a cloth to spread under them.

Europeans, says another writer, become predisposed to the disease through intemperance, and more certainly if they expose themselves in a state of intoxication to the night air, or fall asleep in an open place. The fatigue and exposure to which the natives are subject, together with a deficiency of clothing, bad food, the eating of cold fruits—as melons, cucumbers, raw vegetables, &c., evidently lay them open to sickness, and never fail in producing more or less of fever and bowel complaints at this season of the year (July, 1818). But now, says the narrator, these common affections are much fewer in number than is usual, and the Cholera has, in stead, been the prevailing distemper.

Testimony, to the like effect, has been borne with wonderful unanimity, by all the writers on Cholera, not only in India, but in China, Persia, Russia, Poland, Germany, and England. The disease was most widely disseminated, and most deadly in its effects among the serfs of Russia, who live in the extremest filth, and in habits of beastly intemperance. The houses in which the disease occurred in Moscow, were inhabited by a class of persons extremely poor, habitually filthy, and addicted to intemperance, and who lived in low and damp houses, and in cellars. Many of the chambers only nine feet square, were occupied each by thirty individuals.

Every where in Europe, say the best authorities, on the subject, the poor, the ill-fed, and the ill-clothed, and the intemperate, have been the greatest sufferers.*

When persons of note have fallen victims to the pestilence, we might, as in the instances of Marshal Diebitsch, and the Grand Duke Constantine, find an explanation in much mental anxiety and habits of intemperance. It has been stated on

* This was written before the accounts of the ravages of the Cholera in Paris had been received. The disease there seems to have taken a wider range, but still the large, very large majority of sufferers, were of the class already mentioned, viz. the poor, the needy, the ill-fed, and badly-lodged, and those given to excesses.

good authority, that in *ninety* cases in a hundred, in St. Petersburg, the common victims to Cholera were the irregular, the dissipated, those with broken constitutions, and impaired health, the badly fed, the badly clothed, and those who indulge in intoxicating liquors.

The coarse ascendent food, the sheep-skin clothing, of the peasant, seldom changed, and worn even at this season (June), the protracted religious fasts, the subsequent intemperance, both in eating and drinking, the intolerably close apartments of the Russians of all ranks, their consequent sensibility to sudden change of temperature, render them in our opinion, say English physicians, in St. Petersburg at the time, particularly liable to suffer from the disease.

At Warsaw the individuals affected generally belonged to the lowest class. Their condition, as we learn from intelligent physicians on the spot, is wretched; their food, very coarse brown bread, potatoe whiskey, salted meat and herrings, cheese of the country, and a paste made of water, which is very difficult of digestion.

Three drunkards, after one of their orgies, perished by the disease in four hours, and a drunken servant in a hotel in which two French physicians lodged at Warsaw, was found dead in his bed.

The agency of intemperance in predisposing to, and exciting the disease, is shown by the fact, that after it had begun to decline in Riga, the indulgence in intoxicating drinks, and other irregularities during the Whitsuntide holidays, caused a temporary augmentation of new cases. The breaking out of the disease at Gateshead, in the north of England, was directly consequent on Bacchanalian festivities of Christmas' eve. Women of dissolute habits have been common victims to the Cholera. Any sudden change in the habits of an individual or people, as in congregating for religious and other festivals, or in soldiers encamped, and in the field, are strong predisposing causes of the disease. In India, on the occasion of an assemblage of pilgrims to worship Juggernaut, the mortality was excessive. The like disastrous consequences were observed in the crowd of pilgrims at Mecca. The disease first showed itself in Poland, among the soldiers, in the short and memorable, but unfortunate campaign of 1831. It prevailed more especially among those who were fatigued by long and forced marches, exposed to the inclemencies of the weather, and who observed no precautions in regard to their health. Those regiments

were first and mainly sufferers who were encamped on low, swampy ground, between mountains, and the soldiers of which were fed upon little else than pork. After the battle of In-ganie, on the 10th of April, which was long and bloody, the Polish soldiers, heated and fatigued by their uncommon exertions, drank greedily of the muddy water of the marsh, and before the night of the 12th, many were destroyed by Cholera.

Among the causes of Cholera, none are more promptly or fatally operative than a depressed, anxious state of mind. This fact has been recorded by the medical men both of India and Europe. That many died of fright was generally an accredited opinion at St. Petersburg, during the prevalence of the disease in that city. The only attendant upon the sick in the infirmary of Sunderland, who had died of Cholera, was a nurse. She was a comparative stranger in the institution, was greatly alarmed, and in the opinion of the narrator of the case, really died of fear.

Insufficient and unwholesome food has been already stated to be one of the causes tending to bring on an attack of Cholera. The subject is important enough to authorize our introducing a few additional particulars in this place. Some of the English physicians in India maintained, that the disease was clearly referrible to the use of damaged rice, by the natives. This grain is their chief article of food, and when the crops are deficient, or the grain damaged by wet seasons, we can rarely conceive how prone the inhabitants must be to various diseases, among which those of the stomach and bowels would naturally be the chief. The Russian physicians have also adverted to the agency of bad and indigestible food, in the production of Cholera in that country. This is distinctly admitted in the precautionary instructions issued by the Russian and Austrian governments, and by the medical boards in Berlin and Hamburg, respecting the articles to be shunned as food—they are unripe and watery fruits, beer, hydromel, sour soup, mushrooms, cucumbers, and melons, sallad, and spoiled fish, and greasy food generally. The sale of cucumbers and water-melons, which were peculiarly abundant in the fall of 1829, was prohibited by the magistrates at Orenberg.

II. MEANS OF PREVENTING THE EXTENSION AND MITIGATING THE VIOLENCE OF CHOLERA.

Some persons have deemed it possible absolutely to prevent the breaking out of the pestilential or fatal Cholera in a city or district. This opinion grows out of the belief that the disease is transmissible either by persons or goods, or both, and that in this way it may be communicated from the sick to the well, from a place in which it rages to another before exempt from it.

The great body of facts which have transpired, in the history of the disease in different countries, during the last fifteen years, are totally at variance with this creed.—Let us repeat some of them here, beginning with those respecting the first appearance of the disease in different cities of the world.

It is generally admitted by the physicians of British India, that Cholera broke out in several different parts of Bengal nearly simultaneously, or at least without their having any intercourse with each other. It is also admitted that these out-breakings of the disease, some of them as early as May, 1817, were anterior to its appearance in Jessore, in August of the same year. It is common, however, to speak of the Cholera as beginning in this last mentioned city, whereas, in fact, its origin might just as well be traced to Calcutta, where its presence was manifested nearly at the same time as in Jessore. Without further examining the question of the propagation or extension of the disease in India, since no comparison can be instituted between the effects of free and suspended intercourse in that country, except in one instance, we shall pass on to a notice of the first restrictive measures pursued in that quarter of the world. The exception just alluded to, was the circumstance already mentioned, of the disease appearing in as rapid an order of succession in places to the south of Madras, at a time when the navigation and intercourse between that city and all of the latter was entirely interrupted by the force of the monsoon, as it had done in places to the north of Madras, when the navigation was open, and the commercial intercourse uninterrupted.

The governor of the island of *Bourbon*, admonished, as he thought, by the ravages of the disease in the Mauritius, took every possible precaution to cut off all intercourse between the former and all suspected places or ports; and with this view

established a most rigid quarantine. Notwithstanding all these measures, the disease made its appearance in the island.

We begin our notices of the attempts in Europe to keep off the disease by restrictive measures of insulation and non-intercourse with *Astracan*. This city, it will be remembered, was the theatre of the disease for a time, in 1823. It then subsided without its spreading to the adjoining provinces. The conclusions of the medical men, as given below, refer to the disease in 1830.

The chief physicians of the hospitals of that city, in their letter to the medical council at Moscow, among other details give the following:

The Cholera first appeared one hundred wersts from Astracan, on board the vessel of war, *Bakon*, last from the isle of *Sara*, a place exempt, at the time, from Cholera: this vessel was retained in quarantine in *Sedlitz*, sixty miles from Astracan, and not one of the sick reached this latter city. The Cholera manifested itself rapidly and simultaneously in many parts of the city, without the sick having had any communication with the places abovementioned.—The first person affected with the disease at Astracan, had not arrived from a suspected place, but was a resident of the city.

At *Orenberg*, quarantine restrictions were equally unsuccessful.

We learn from the official letter, signed by the physician, police officer, and others, that, after the most minute inquiries, the man first attacked with Cholera in *St. Petersburg*, had no immediate intercourse whatever, with persons who had come from any other place—nor could direct personal intercourse be traced between any two of the first five or six cases. These occurred, be it remembered, at a time when the city was surrounded by sanitary cordons, and a rigid system of quarantine carried into effect, directly under the eyes of the government, and with an immense array of military force.

The most careful and minute inquiries, as we learn from both a German and an English physician, instituted at *Moscow*, prove incontestibly, that the disease was not imported into that capital; but that it appeared there spontaneously. It was ascertained that the first four patients had not themselves been in any infected place, nor held communication with any person or persons coming from such a place.

The British Consul (and he is borne out in his statement by the Livonian government) tells us, that the disease appeared

simultaneously in three different places at *Riga*.—The first cases were two stone-masons, working in the Petersburg suburbs, a person in the citadel, and a lady resident in the town. None of these persons had the slightest communication with the crews of barques, or other strangers.

Dantzic was said to have received the disease from *Riga*.—The truth is, that there had been two cases a German mile from *Dantzic* on the 27th May—two in the town in different parts, on the 20th, and others on the 29th, in three or four villages near *Dantzic*. Now, the first vessel which left from *Riga* after the disease had broken out in that city, did not arrive at *Dantzic* until the morning of the 30th May; and she had a clean bill of health. The captain of this vessel died on the 31st May, as it was supposed, but not proved, of Cholera. Be this as it may, the disease had appeared in different parts of *Dantzic* three days before the arrival of the vessel from *Riga*.—With Poland the intercourse had ceased since the beginning of the winter.

Breslau, the capital of Silesia, in what was considered the enjoyment of the most perfect system of quarantine, both on the frontiers of the province, and on the river Oder, was suddenly alarmed by the disease appearing in one of its faubourgs. The first case was of a female who had never quitted the city, nor ever been engaged in the traffic of clothes. After the most minute investigation by the public authorities, not the slightest evidence was obtained of this person having had communication with any stranger, or goods suspected of being infected. In a few days after her death, many persons were attacked with Cholera, in parts of the city remote from each other.

In some of the cities in Germany and Hungary, besides a total suspension of intercourse between those in which the disease was present, and neighbouring as well as distant places, each house in which a person happened to be attacked, was immediately surrounded by a guard, and all communication between it and other houses was prevented. New cases, nevertheless, continued to occur daily, in different parts of these cities—and the precautions thus taken, seemed rather to increase the number of the victims of the disease, than to curtail its spread.

Berlin, despite the sanitary cordon, composed of the choice troops of the kingdom, under the eye of the Sovereign himself, became a theatre for the ravages of the Cholera.

The inhabitants of *Hamburg*, looking with anxiety towards

Prussia and the country eastward, and enlisting all the means in their power by sanitary cordons and quarantine, to prevent the disease from approaching in that quarter, found it suddenly appear in the midst of them, rising, as it were, out of the earth from the *deep cellar*, whose inmates were, as already recorded, the first victims.

Similar restrictive measures imposed by the Austrian government, were attended with the usual want of success—and Vienna became a seat of the disease in more rapid succession, after other cities of Hungary and Poland, than had been observed of many places where no artificial barriers had been interposed.

A rigid system of quarantine and guard vessels were of no avail to prevent the disease appearing in Sunderland.

On hearing of the Cholera committing such ravages at Mecca, the Pacha of Egypt established a rigid quarantine for all persons and goods coming from Arabia. The caravan from Mecca was accordingly placed in a lazaretto three leagues from Cairo. Thirty-four days had elapsed since it left the former city—on the route it lost ten of its number of Cholera. In proportion as they approached Cairo they suffered less. When at the lazaretto, they were surrounded by the troops of the Pacha in two cordons—the one nearest the caravan being also separated from that more remote and external. Sentries were placed between the two cordons, so as to prevent all communication between them. Nevertheless, in spite of all these precautions, three days after the arrival of the caravan in the lazaretto, three soldiers of the first cordon were attacked with Cholera, one of whom died in a few minutes. On the same day, 15th August, four persons coming from Cairo with goods, were seized with the disease, and persons in the city were at the same time also its victims.

In Alexandria the Cholera broke out in the city, and among the troops who formed the *second* or *inner* line from Aboukir to Marabout.

These several facts all concur to authorize the positive conclusion, that non-intercourse between places actually ravaged by Cholera, and places still exempt from the disease, however rigidly enforced, can give no certainty, nor even any well-founded hope of protection for those latter. The promised benefit from such restrictive measures has not been obtained, while the inconveniences and sufferings caused by them have become too manifest.

Is the Cholera transmissible by Persons and Goods?—The assumption upon which the restrictive measures just detailed, have been based, viz. that Cholera is generally, if not uniformly transmissible by persons and clothing, or merchandise, is controverted at every step of our inquiries into the history of the disease. The facts and arguments preponderate greatly on the other side, and would seem to be continually augmenting with the increase of our knowledge of the habits of Cholera. A few will suffice for our present purpose.

The persons composing the family of the Persian prince, quitted the city of Tabriz after the violence of the disease had already began to abate. They, however, carried the Cholera along with them, and continued to be attacked, from four to six a day, for about ten days, but not a single person in the villages through which they passed or where they slept, took the disease. During the prevalence of the Cholera in Moscow, about forty thousand persons quitted that city, of whom a large number never performed quarantine, and yet no case is on record of Cholera being transferred from Moscow to other places; and it is equally certain, says the respectable Prussian physician from whom we derive the foregoing statement, that in no situation appointed for quarantine, has any case of the disease occurred.

In the year 1823, during the period in which the disease first prevailed in Astracan, large numbers of persons left the city daily; nevertheless, they did not convey the disease either to remote cities or to the nearest neighbouring villages. In 1830 many villages remained free from Cholera, notwithstanding the constant communications with the city—one, five wersts from Astracan, on the shores of the Wolga, where whole families and workmen sought refuge, when the disease was at its height. It was the same with many others, where not only families, but the sick were transported.

Whilst the disease was raging at Breslau, after quarantine, found useless, was done away with, the intercourse between the city and the neighbouring burghs and villages was uninterrupted. For six or seven weeks three or four thousand peasants entered into the city every day and returned to their homes. Many of them had communications with the houses of the sick, and yet to many of the villages the disease did not extend. Thus not a single case occurred at Shertunez, where more than two hundred persons repaired every day to their country seats—the large burgh of Marieneu, east of Breslau, and the vil-

lages of Fabitz and Neudorf, which join the city, and contain each from one thousand to twelve hundred inhabitants, equally escaped.

During the prevalence of the disease at St. Petersburg, constant and free communication was kept up between it and a village about fifteen wersts distant, that of the Germans, and not a single case of disease occurred at the latter place.

Taking these facts in connexion with the instance of exemption from the disease enjoyed by the villages in the island of Kristofsky, notwithstanding unlimited intercourse between them and the city of St. Petersburg, we shall know what value to attach to the statements of insulation of places and persons having protected them from Cholera. The fact of escape from the disease, by no means implies a correctness in the assumption that quarantine was the protecting means, the more especially when we call to mind the well known circumstance recorded by different writers on the East Indian Cholera, that in the very centre of extensive districts ravaged by Cholera, there are certain narrow strips or patches of country, into which there existed no natural obstacles to the extension of the disease, but into which it never penetrated, although all around was one scene of desolation.

This part of the subject cannot be placed in a clearer light than by simply observing that the instances of immunity from the disease where unlimited intercourse had been allowed, are in tenfold greater number than where restrictions had been imposed and non-intercourse enforced. Non-intercourse by sanitary cordons and quarantines, do not even give an additional chance of escape. Their tendency and effect are the other way.

There has not been found any appreciable connexion between the full and frequent intercourse of physicians, nurses, attendants, and friends, with the sick of Cholera, and the number of the former who have been attacked with the disease. If Cholera were thus communicable, a large majority of the persons designated, ought to have had the disease—whereas, in fact, a large majority of them entirely escaped. Those who were attacked were not in greater proportion than would have suffered from any prevalent disease whatever. At Moscow, five hundred and eighty-seven patients affected with Cholera, and eight hundred and sixty labouring under other diseases, were admitted into the hospital of Ordinka. This hospital consists of a single building, three stories high, communicating by stairs placed within the wards. The same attendants had charge of all the

patients; the different articles of furniture were distributed without distinction to the patients, and all their clothes were washed together by the same persons. Of the eight hundred and sixty patients above alluded to, not a single one became affected with Cholera, and of one hundred and twenty-three hospital attendants, two only were affected, a man and a woman, both of whom were disposed to the disease from very irregular conduct, for which they had been censured.

Instances of entire immunity after constant intercourse with the sick, might be greatly multiplied both in India and Europe.

The women who washed the clothes of the patients in the hospital at Orenberg, were entirely exempt from the disease. A like immunity was enjoyed by the attendants who helped the patients in and out of the bath, rubbed their bodies, dressed blisters, &c. in different Russian and other hospitals.

The physician general to the town hospital of Dantzic, says, that there were five waiters always near the patients; eight men were employed in rubbing and bathing; nine medical men visited the patients, of whom one was always in the room in the day time, two watching every night; no one of these twenty-two persons fell ill.

I have visited, says Dr. White, the Gateshead hospital, during the time I had the honour of being physician to that institution, under all circumstances of physical depression. I have breathed the atmosphere of its apartments for hours together; yet I, the attendants, the nurses, all equally exposed, have equally escaped. Not a single individual in the profession has sustained an attack since the disorder has prevailed.

We are not to suppose that physicians and nurses should be entirely free from attacks of Cholera—we ought, on the contrary, to be surprised at the proportion being so small, when we consider how the extreme fatigue and loss of rest which they undergo, must peculiarly predispose them to the disease. Very different, however, would be the result, if physicians, friends, and attendants, were obliged to render their services in the close, confined quarters of a city or town, and in the damp, filthy, and ill-ventilated houses, of those who are in the greater number victims to the disease. Hence it becomes the duty of government, and the proper corporate authorities, to make provision for the reception of the poor and needy in suitable hospitals, and also for an evacuation of all cellars, and underground lodgings, and close, dirty hovels, by their customary tenants.

TRUE MEANS OF PREVENTION.

We are now to consider the means best calculated to prevent an extension of the disease, when once it has appeared. This is as much as can be accomplished by human powers. But although we cannot alter or amend those conditions of the atmosphere, which give origin to, or are essentially connected with, the disease, nor change the localities in which it for the most part has its home, we can do a great deal towards depriving it of its horrors, by diminishing the exposure to those occasional and predisposing causes which are found to be so destructive. The sanitary regulations promulgated and enforced with this view, are ranged under three heads. 1st. Those which regard the place; 2. Those in reference to habitation; and 3. Those relating to persons.

SANITARY REGULATIONS.

1. *Those which regard the place.*—The streets should be daily cleansed of all offal, dirt, and any impurities whatever, and the gutters frequently washed with running water. In no yard or open lot should any collections of dirt or animal or vegetable matters be allowed to remain, nor any ditch or pool be left unfilled with earth. No removable obstruction to a freer ventilation of courts, and alleys, and narrow streets, should be tolerated.

2. *Those which regard the habitation.*—The cellars should be kept dry, and the sinks cleaned out, or occasionally water with a little chloride of lime, introduced into them. This substance should be sprinkled over the floors of those cellars more particularly, through which there is not a free current of air. Dissolved in water, with the addition of a little quicklime, it should be applied as a wash to the walls of cellars, closets, and rooms in which many persons work together. Free ventilation of the sitting and bed rooms should be enjoined and practised—the floors dry-scrubbed, and, as well as the bedding and bed clothes, aired at least once a day. Arrangements should be made for suitable ventilation and constant renewal of the air in all kinds of rooms or halls in which a number of persons congregate together, as in schools, churches, manufactories, &c. The air should be introduced in such a way as not to blow in a current upon the persons in the room, or to suddenly chill them after being heated.

No person should, if it can be possibly avoided, sleep in cellars or underground apartments of any kind, since experience has universally proved the greater liability of persons thus lodged to be seized with Cholera. Those who sleep on the ground, or on mud floors little raised from the surface, are in much greater danger than others sleeping in the second or third story of the same house. It was even remarked by Dr. Livingston in China, that in some houses, persons who slept on beds sometimes escaped, while those who lay on the floor, on mats, and the like, in the same apartment, had the disease in its worst form. Most of the cases which came under Dr. Livingston's care, were, at the time of attack, in small, ill-ventilated apartments, commonly on the ground-floor.

A number of persons in the same room tends to deteriorate the air, and if they sleep in it, the chances of disease are greatly increased—hence crowded bed-rooms are especially prejudicial.

3. *Those relating to persons.*—Personal cleanliness should be rigidly promoted by regular ablution or bathing in water of such a temperature as the feelings and experience of the individual teach him to be most agreeable and salutary. Frictions of the skin with a coarse towel or brush are particularly commendable, and in persons who have been suddenly chilled, or whose feet are habitually cold, these parts may be well rubbed with warm salt and water, or fine salt, or mustard flour. The clothing, and especially the covering of the feet, should be thick enough to protect the body against sudden changes of temperature, or from sudden cooling after being overheated. Flannel or domestic muslin will be found to be the safest for inner garments.

Exposure to the night air, or dews, should be avoided, and by persons unavoidably summoned abroad, clothing thicker than that usually worn in the day should be put on. After being suddenly chilled, or wet by rain, a warm bath will be advisable.

They whose business calls them abroad early in the morning, should not leave the house without eating something—such as a piece of stale bread, and some cold meat seasoned with a little mustard or pepper, and washed down with ginger tea, or the like, which can easily be prepared the preceding evening. The meals should be light, and repeated at suitable intervals, so that the body may never be oppressed by quantity nor weakened by hunger. The food should be plain and easy of digestion, consisting of those meats, which general experience has

shown to be nutritious and healthful. More reserve than ordinary will, however, be required in the use of smoked and salted meats, and especially of fat pork, the eating which, in some places, has been spoken of as an exciting cause of Cholera. Lobsters, and the like, are avowedly pernicious. All crude and indigestible vegetables, and unripe fruits ought to be carefully shunned. No material change of the beverages used in families, at morning and evening, will be required. To milk, so largely taken as food and drink, in different parts of the country, exception need not to be taken. But this remark does not apply to sour milk (bonny-clabber) which ought during the prevalence of the Cholera to be entirely abstained from.

The increased predisposition to a fatal attack of Cholera, which has every where been found to result from habits of intemperance, ought to be a sufficient caution on this head. Those unaccustomed to the use of strong drinks should not by any kind of persuasion or false reasoning, have recourse to them—and the habitually intemperate, those prone to excess, cannot too carefully or speedily begin a reform. Abstinence from ardent spirits at all times desirable, is, in seasons of pestilential visitation still more necessary. A substitute will be found for alcoholic stimulation, in the use of ginger and cayenne, as condiments with food. In the case of the man who has desisted from dram-drinking, these articles may be taken at stated times; the first, in the form of tea, the second, in the form of pills.

The poor and needy whose food is scanty, and of bad quality, such as watery vegetables, bad bread, &c., should be supplied with a better nutriment, in the form of good animal broth, good bread, a day old, and a suitable allowance of milk.

In Galicia a better diet furnished to the lower classes, at the expense of the Austrian Government, appeared to have contributed, as much as any other measure, to prevent the spreading of the disease. In a sugar manufactory at St. Petersburg, where all the workmen had increased allowance of food, of a wholesome kind, no individual was attacked. It may indeed be said, that pure air and good substantial living, and a tranquil mind, will be found among the best preservatives against Cholera.

Temperance and regularity of life, in all respects, which are so serviceable in protecting against most diseases, are required

to be observed in a peculiar degree to ward off an attack of Cholera.*

The Committee, in conclusion, deem it their duty to distinctly recommend that suitable measures be taken by the proper authorities, for the establishment of temporary hospitals in different parts of the city, for the reception of Cholera patients, who have not adequate lodging and accommodations at their own dwellings; and also, that provision be made for removing all those persons who live and sleep in cellars, or other close, damp, and ill-ventilated rooms in streets, alleys or courts, in which the disease once showing itself would, without some such precautionary measures, commit dreadful ravages. Immediate specification may be made of a great number of under-ground rooms, used for lodging and sleeping, in the row of buildings between Front and Water streets, and of cellars in various parts of the city, in which men both work and sleep. Not only are the tenants of such rooms more prone to the disease, but they are also less advantageously circumstanced for recovering from its attacks; nor can they be properly attended by physicians, nurses and friends, without detriment, and even danger to these latter, who would then be respiring a damp, close and impure air, and be liable to have their bodies suddenly chilled, after passing from the outer warm air into such a medium.

* The following is an illustration of what care and temperance can perform in the sickly climate of India, in the way of preserving Europeans from the attacks of Cholera:—

“Two bodies of men, one amounting to 300, the other to 100 persons, were located in adjoining situations when the Cholera appeared. The smaller body immediately determined to live temperately, and by avoiding the night air, and the other predisposing circumstances, which were obvious, to endeavour to escape the distemper. The plan succeeded so well, that only one individual was seized, of the one hundred. The larger body adopted no precaution. They lived in their usual way, and one-tenth of their whole number perished.”—(Kennedy, p. 90, 91.)

CHAPTER I.

Of the Origin of Cholera.—Is common as an Endemic Disease.—Illustration of Endemics, in the instance of Remittent and Intermittent Fevers.—Of the Difference between Endemic and Epidemical Diseases.—Further example of Epidemic Disease in Influenza.—Causes of Epidemic Diseases.—Deteriorated air, affecting other animals besides man, also fruits, and vegetation generally.—Instances of stagnant air occurring as a cause of Pestilence.—Defective and bad food a cause of Epidemic Disease.—Influence of Civilization. Examples of destructive Epidemic Diseases in Greece and Rome, during the middle ages, and in later times, in different parts of the world.—The Plague is of home or spontaneous origin in a place, as proved to be in Dantzic and Marseilles.—Prevailed in Northern Europe long before commercial intercourse with the Levant.—The Cholera equalled in its range and exceeded in its mortality by preceding Pestilences.—Even in its present or Epidemic form it is not a new disease.—Is mentioned by Bontius, Paisley, Sonnerat, Curtis, Girdlestone, and others, as prevailing at different times in Hindostan, and by Sydenham in England.—Is Endemic in the United States.

Before we proceed to speak of the *symptoms, post mortem appearances, and treatment* of Cholera, it may not be deemed amiss if, after some observations on epidemic and endemic diseases, we give a brief abstract of the facts, so far as they have transpired, of the causes, and of the means of guarding against an attack of this malady.

First; as regards *the Origin of Cholera*.—The disease termed *Cholera Morbus*, of which that now under consideration is but an aggravated or epidemic variety, is known to every reader as of no unfrequent occurrence in the summer season, in nearly all climates. The more common causes are great fatigue and exposure to the sun during the day, and to the cool air and dews of the succeeding night—the use of indigestible food, especially of crude vegetables, unripe fruits, certain kinds of game, and of fish, such as lobsters and crabs, and drinking newly-fermented liquors. In inter-tropical regions and countries contiguous to them, Cholera Morbus is endemic, that is, a disease recurring annually at stated seasons from the operation of agencies fixed in and peculiar to the country, such as the air, soil, exposure to particular winds, the food used, and water drunk by the inhabitants. Intermittent fever, for example, is endemic in low marshy situations, or in alluvial and volcanic soils—as in the fens of Lincoln and Cambridge-shires in Eng-

land, parts of Provence and Brittany in France, the valley of the Po, and the country around Rome in Italy, and the eastern portions of many of the southern states in this country. But although the causes of intermittent fever are present the greater part of the year in particular districts, the inhabitants are not necessarily sufferers from the disease. By adopting suitable precautions, such as avoidance of extremes of temperature—the hot sun by day and the cold air by night—the use of plain and nourishing food and warm clothing—abstinence from ardent spirits, people may live long in a fever and ague country, without contracting the disease.

It sometimes happens that diseases, commonly confined to particular districts of country, will take a wider range, and appear with aggravated symptoms. We have had an example of this in the occurrence of remittent and intermittent fevers within the last ten years, in regions before exempt from them, and even on hilly and mountainous situations, where the disease had never been known to prevail before. Such occurrences may be, at times, the result of uncommon atmospherical vicissitudes and deviations from the usual order of the seasons. At other times, we are unable to detect any perceptible cause or combination of causes to account for the production of the diseases in question. When thus diffused over large portions of country, and attacking persons in great numbers and with unusual violence, they are denominated epidemic, remittent, and intermittent fevers.

Another familiar illustration of the difference between the common or endemic influences and the epidemical ones, is found in catarrh. Particular situations, high, bleak, and exposed to easterly winds render the inhabitants liable during the winter and spring months to colds or catarrhs. We are, in northern latitudes, all accustomed to see, and most of us to feel, this disorder, and the variety of disorders having their beginning in this one; and we have no hesitation in assigning the causes. Epidemical catarrh or influenza, on the other hand, which will affect the population of a whole country or continent, does not acknowledge these evident states and changes of the weather as the sole or necessary causes. Something else is superadded, which we can only appreciate by its effects.

It would be very unphilosophical to argue from the general spread of remittent and intermittent fevers, or of influenza, and the number of persons affected in rapid succession with analogous symptoms, that any of these diseases was, as the phrase is,

catching, or that persons, before in health, would become affected by intercourse with the sick. We all immediately admit, in these cases, a community of cause, the precise nature of which we cannot, either by our senses or any known instruments, measure, but which we feel assured depends on some general deterioration of the atmosphere. That there is a great change in the atmospherical constitution, we have evidences, derived from the grains and fruits of the earth being deficient, and of bad quality, and from animals, wild, and still more, domestic ones, sickening and dying during the seasons of epidemical visitation. Conjoined with the change in the air are unusual phenomena in the earth itself, as earthquakes, volcanic eruptions, the water of wells becoming impure, fishes dying in the rivers, &c.

Whatever may be the actual state of the air at the time, which gives rise to an epidemic disease, we have abundant evidence to show that this cause is rendered infinitely more efficacious in adding to the intensity and complexity of the latter by the combination of local causes—such as the nature of the soil, its elevation above the ocean, with the sensible states of the air and the prevalence of particular winds. Thus, for instance, during the prevalence of a winter epidemic, or of influenza, although the major part of the population of a country are affected by the altered, but yet unknown state of the atmospheric air, and complain of coughs, sore throats, pain in the breast and limbs, still the greatest sufferers are those living in low, damp situations, exposed to cold and moisture, or to a prevalent easterly wind. So, also, in autumnal epidemics, they are in most danger, who are exposed to the alternations of heat in the day, and cold and moisture at night—who work in low grounds and sleep on the ground floor, or exposed to the night dew, or, if more favourably circumstanced, who are blown upon constantly by a prevailing south-easterly wind. So obvious are the depressing and deleterious effects of certain winds during seasons of the visitations of epidemical disease, that they have been, on occasions, supposed to be the bearer of the pestilential principle causing and sustaining it. Thucydides informs us that the plague was thought to have been transported from Egypt to Athens, by the southerly wind which continued to blow for a length of time preceding and contemporaneously with the prevalence of the disease in the latter city. Easterly winds, so notoriously excitors of intermittent fevers, aggravating them when present, and bringing on relapses, are often precursors of violent epidemics. The summers preced-

ing the attacks of yellow fever at Gibraltar, in 1804, and 1810 and 1814, were chiefly remarkable for a long continuance of easterly winds. Testimony has been borne to the prevalence of the south-east wind in similar epidemics, in the West Indies, and in parts of the United States.

A stationary atmosphere, as where there has been a long calm, with little or no agitation of the air by winds, is often a powerfully contributing cause of epidemic diseases. Still more deleterious is a stagnant air loaded with exhalations from living bodies, as when a number of persons are confined together in narrow limits and no adequate ventilation admitted. Prisons, camps, ships, and even hospitals, have on this account been the seats of direful diseases, to which the epithet pestilential applies with peculiar force. Not only is this contaminated air the cause of disease and death to those constantly inhaling it, as they necessarily do, who are tenants of the close, damp cells of a jail, or crowded to excess in the ward of a hospital; but is, on occasions, destructive to those who come within its range, even for a short time, as in the case of physicians and others on visits of relief and mercy to the abodes of crime, misery, and poverty.

Memorable examples of the horribly destructive effects of a stagnant air, are furnished in English history—the first occurred in England, the second in British India. At the Black Assizes, held in Oxford, in 1577, in the early part of the month of July, so great was the crowd, that the air became completely deteriorated, and there were no less than 1500 persons who died, some, as the jurors, almost immediately, others after the lapse of a few days. Two hundred of the above number died out of Oxford, between the 4th and 12th of July. “After which,” says Stone, “died not one of that sickness, for one of them infected not another, nor died thereof any one woman or child.” The second example is yet more terrific, as the loss of lives was brought on by vindictive cruelty. Of a hundred and forty-six persons, comprising the English factory, at Calcutta, who were made prisoners of by Surajah Doullah, and confined during the night in a dungeon partially under ground, only eighteen feet square, and with but one opening for light and air, but twenty-three survived till morning. Too many similar illustrations of an infected air, are found in the dreadful mortality among slaves confined in larger numbers, between decks, on board of Guinea traders.

The kind, and more especially the quality of food as regards its nutritive properties, modify greatly the predisposition to an attack of epidemic disease. The want of food, as in times of great scarcity is first and most severely felt amongst the poorer classes of the population, and hence one cause of the early and greater proportionate mortality among them, than in those in better circumstances. It is also worthy of remark and remembrance, that pestilence following famine is not simply referrible to the scarcity and want of food, but to a deterioration of its nutritive properties by a morbid state of the air, and deviation from the usual order of the seasons, and also to an increased excitability or susceptibility to disease, induced in people generally, by this altered state of the air.

Seasons of great national calamity, by which the people of a country are greatly agitated and depressed, render them more prone to attacks of disease. The neglect, to a certain extent, of agriculture, and interruptions to commerce, place them also, at this time, under the influence of the causes already adverted to, as depending on scarcity of food.

In the history of Europe, we find the widest and most destructive pestilences to have prevailed in the ages of the greatest barbarism, when war and pillage were the chief employments of the inhabitants, and when agriculture had made little progress, and commerce was too insecure to admit of the transportation of grain and other alimentary substances, from a country having a superabundance to another suffering from scarcity or famine.

It would not be compatible with our purposes, in this brief sketch of epidemic diseases, to detail their visitations in different countries, from an early period to the present time. Some few notices on the subject will not be without interest. Both Greece and Rome were, we know, grievously afflicted at intervals, with fatal epidemics, to which the epithet plague was always attached. Thucydides has given us an eloquent description of that which devastated Attica, and from which Athens more especially suffered during the Peloponnesian war. The origin of this pestilence was supposed to be in Ethiopia, thence extending to Egypt, Lybia, Persia, and Greece. As has been recently said by a modern writer,* we are not, however, to suppose that

* Noah Webster—*A Brief History of Epidemic and Pestilential Diseases*, &c. 2 vols.

this disease, any more than others of a nearly similar reputed origin, is propagated by contagion from one person to another. It appears first where the original, or secondary causes are the most powerful. *“If the state of the atmosphere over the world, at any one time, is equally vitiated by some unknown cause, its effects will first appear in places where that state of air is most powerfully aided by local vitiations, as in cities or marshy grounds.”* The chief local cause in Athens was the crowding together into the city, the inhabitants of the country, in order to avoid the attack of the Lacedæmonians.

The reign of the Emperor Justinian was rendered remarkable among other circumstances, by a pestilence, or rather succession of pestilences “which almost destroyed the human race, and for which,” says Procopius, a contemporary historian, “no cause could be assigned but the will of God. It did not rage in one part of the world only, nor in one season of the year. It ravaged the whole world, seizing all descriptions of people, without regard to different constitutions, habits, or ages; and without regard to their places of residence, their modes of subsistence, or their different pursuits. Some were seized in winter, some in summer; others in other seasons of the year.”

But the most awfully destructive pestilence which the world ever experienced was in the period which intervened between the years 1345 and 1350. We are told in the histories of the times, that it commenced in China. It appeared in Egypt, Syria, Greece, and Turkey, in 1346; in Italy and Sicily, in 1347; in France, and the southern parts of Spain, and in England, in 1348; in Ireland, Holland, and Scotland, in 1349; and in Germany, Hungary, and the north of Europe, in 1350. In this period a comet was visible—also meteors of various kinds; the seasons were irregular—myriads of insects were seen—domestic animals sickened and died—and fish were found dead in immense numbers. So deadly was the onset of this plague, that at least half, some say two-thirds, of the human race, were destroyed by it. It was most fatal in cities, but in no place died less than a third of the inhabitants. In many cities, nine out of ten of the people perished, and many places were wholly depopulated. In London, we are told that 50,000 dead bodies were buried in one grave-yard. In Norwich, about the same number perished. In Venice there died 100,000. In Lubec, 90,000. In Florence the same number. In the East it has been said, with what degree of accuracy we cannot vouch, that

twenty millions perished in one year. In Spain, the disease raged three years, and carried off two-thirds of the people.

In England, and probably in other countries, cattle were neglected, and ran at large over the land. The grain perished in the fields for want of reapers; and after the malady ceased, multitudes of houses and buildings of all kinds were seen, mouldering to ruin. Although in the preceding year there had been abundance of provisions, yet the neglect of agriculture during the general distress produced a famine. Such was the loss of labourers, that the few survivors afterwards demanded exorbitant wages, and the parliament of England was obliged to interfere, and limit their wages, and even compel them to labour. See 23d Edward III., A. D. 1350.

The disease reached the high northern latitudes; it broke out in Iceland, and was so fatal that the island is supposed never to have recovered its population. It was called the *sorte diod*, or black death.

The pestilence was remarkably fatal to the monks and regular clergy of all descriptions. At Avignon, where the disease first appeared in France, 66 of the Carmelites had died before the citizens were apprised of the fact; and when it was discovered, a report circulated that the brethren had killed one another.

This is an important fact in the history of this epidemic, adverse to a belief in its contagion—viz. that the disease first appeared in a city not commercial, nor a sea port; and in a monastery which was probably crowded with idle and filthy monks.

Our motives for introducing here the narrative of the awful plagues in the reign of Justinian, and in the first part of the fourteenth century, are to show our readers, that mankind have suffered more on former occasions from the visitations of disease, than of late years from the dreaded scourge of Cholera; and also that they may be made aware of the ameliorating influence of civilization—implying improved minds, and knowledge, and a greater amount of means for promoting personal comfort, and protection against morbid causes. Dreadful as the mortality from Cholera has been, we can promptly discover that it is mainly restricted to a particular class, whose situation and habits reduce them to a level with the large majority of the people of the middle or barbarous ages, and expose them to the same calamities in seasons of epidemical disease. When a pestilential malady, call it what you will, yellow fever, Cholera, &c., now appears in a city, but a small portion

of the inhabitants are victims to the disease. In former ages, analogous diseases passing under the common appellation of plague, would nearly depopulate a city. We have already mentioned the loss of 90,000 citizens of Florence, nearly a third of the entire population, by the plague in 1347. In 1359, on a similar visitation, the mortality was estimated at 100,000; whereas the deaths from the Cholera in Moscow, with a population of 350,000, in 1830, were short of 5000. St. Petersburg also, with nearly an equal population, encountered the like loss. Vienna, containing 300,000 inhabitants, lost not 4,000. Even in Paris, where the mortality was excessive, amounting to upwards of 15,000, yet when we consider the population of that city, upwards of 800,000 inhabitants, we cannot but be sensible of the increased advantages which the people of the civilized world at this time enjoy, of warding off pestilence entirely, or of greatly mitigating the violence of its attacks.

In the next or latter part of the fifteenth century, viz. in 1483 or 1485, a new species of plague appeared in England, called the *Sudor Anglicus*, or sweating sickness of the English, because it was supposed either to have originated in England, or to have attacked none but Englishmen. This disease prevailed, however, at different times, in Ireland, Germany, Sweden and Holland. It was remarked, also, as illustrative of a general deterioration of the atmosphere, at this time, that when the sweating sickness prevailed in Europe, this, or some other pestilential disease was raging in other countries.

To the same argument, that the inhabitants of different countries are affected in epidemics by common causes, and do not infect each other, are numerous histories of these diseases. In 1654, the plague appeared in Chester, in the north-west of England, in Denmark, Russia, Hungary, and Turkey in the *same season*. The year of the great plague at Marseilles in 1720, was marked by increased mortality in the other chief cities of Europe, and also in various parts of America. Many writers speak of the introduction of the plague into Marseilles from the Levant, by means of a ship from Said. But the account is not much better than pure fiction, since it is acknowledged that when the vessel left Said, the plague had not appeared in that port or town. Some of the crew did indeed die on the passage, of malignant fever—but this disease, of whatever nature it may have been, was not brought from Said. It originated on board ship, and was not communicated to the inhabitants of Marseilles. Six weeks had elapsed from

the arrival of the vessel, and the death of the sailors, to the appearance of plague in the city. The disease was as decidedly of spontaneous origin here, as it had been twelve years before in Dantzic, from which the most rigorous measures by quarantine and guards had been taken, to exclude its approach from Poland, and Hungary and Russia.

Some places in the direct line of communication between others suffering at the time from the Plague, have escaped. The same remark has been made in reference to Cholera, and the explanation in both diseases is the same, viz.: that the concurrence of local causes was not sufficient to give effect to the general epidemical constitution of the atmosphere. When the Plague desolated Verona and Padua, in 1720, the city of Vicenza, which lies between the two, escaped. But next year this latter suffered greatly, when they were exempt from the calamity.

National vanity always revolts at the acknowledgment of the home origin of pestilential diseases of any kind—an excuse for indolence, vice, and mismanagement, is found in making them of foreign origin. Plague has always been and continues to be a common disease in the Levant: it was once of frequent occurrence in various parts of western Europe. Of later times, or within the last century, it has ceased to appear in these latter countries, and the inhabitants have become assured that it cannot any more break out among them, unless it be imported from Turkey, Egypt, or Asia Minor. Here we would ask, whence came those dreadful pestilences which ravaged Europe, when many places which suffered most had no intercourse with the reputed home of Plague. “The Plague was as frequent and severe in England, Denmark, Sweden, and Germany, in the tenth, eleventh, twelfth, and thirteenth centuries, before any foreign trade existed, as in any other period.” Not to mention the universal Plague in the days of Vortigern, about 448, which never has been exceeded in extent and violence, except by the black pestilence of 1348.

“The Levant Company was first established by Queen Elizabeth in 1581, and the act of incorporation expressly states, that ‘Sir Edward Osborn and his associates, the persons incorporated, had at their own great cost and charges, *found out and opened* a trade to Turkey.’ Before that time the commodities of Egypt, Syria, and Turkey, were all imported from Italy in Venetian or Genoese ships.”*

* Webster, op. cit.

We have now, with as much brevity as possible, convinced our readers, we hope, that the present scourge of the world, the Cholera, is neither unparalleled in its course and extent by other epidemical diseases, nor has it been productive even of as great mortality as some of these. It now remains for us, in completion of this part of our subject, to determine whether or no Cholera is a new disease. As an endemic it is a common malady; its epidemic character does not invest it with any specific differences; the difference is in degree, not in kind. But medical history satisfies us that, even as an epidemic productive of great and sudden mortality, it has shown itself at different periods during the last century in India. For this information we are mainly indebted to the *Report of the Madras Medical Board on Cholera*.*

Bontius, a Dutch physician, who wrote in 1669 at Batavia, mentions the Cholera as prevailing endemically in that place, and frequently in so violent a form as to destroy nearly all whom it attacked within a single day. It is stated also, on the authority of Le Begue de Presla, to have prevailed in Bengal in 1762; destroying thirty thousand negroes, and eight hundred Europeans. In Mr. Curtis's work on the diseases of India, there is a letter from Dr. Paisley, dated 1774, in which mention is made of the disease being then epidemic at Madras. It appears, also, from the records of the medical board to have raged as an endemic in 1769 or 70. In 1775 Cholera invaded the Mauritius, and in 1781 a division of the Bengal troops were attacked by it at Ganjam. Five thousand individuals affected with the disease were admitted into the hospital during the first day, and by the end of the third, the half of the entire corps were ill. Men, previously in perfect health, instantly dropped dead, and few survived the first hour who did not ultimately recover. In the month of April, 1783, during a religious festival at Hurdwar, twenty thousand persons were destroyed by Cholera; and in the records of Madras it is stated to have raged at Arcot as an epidemic in 1787. Notices of its prevalence in particular districts in 1790 and in 1814, are given by the East India surgeons.

Sporadic cases of Cholera may occur at almost every season of the year, and in nearly every climate, from errors in diet, particularly from overloading the stomach with rich, acrid or undigestible food; from the sudden application of cold when

* See Appendix.

the body is in a state of profuse perspiration, or from partaking under similar circumstances, of cold drinks; from the accidental introduction into the system of various poisonous substances—from intense anxiety of the mind and various other causes.

The disease is chiefly prevalent, however, in warm climates; in those more temperate, being almost exclusively confined to the summer and autumnal months. In England, “it occurs,” according to Sydenham, “as regularly towards the close of summer and in the beginning of autumn, as swallows in the commencement of spring, or cuckoos in midsummer.” He describes an epidemic cholera which prevailed in England during the summers of 1669 and 1676, in which the symptoms were so severe as to “frighten the by-standers, and destroy the patients in twenty-four hours.”

From its usual appearance in temperate climates during the heat of summer and season of fruit, it has very generally been ascribed, at least by the English writers, to the effects upon the system of an elevated temperature, and to the immoderate use of fruit—especially of such as is unripe, decayed, or highly ascetic. There can be no doubt but that, to the combined agency of these two causes very many cases of the disease are referrible. There are many other causes, however, by which an attack of Cholera is liable to be produced during the summer and autumnal months. Among these may be enumerated whatever gives rise to the ordinary fever, and other complaints of the season, such as intemperance of every species—exposure to the dews of night, sudden changes in the heat and dryness of the atmosphere, excessive fatigue, &c.

In nearly every city in the United States, but especially in New York and Philadelphia, independent of a large number of adults who fall victims to this disease—many hundreds of infants are destroyed by it every year. We are unable to procure correct returns of the number of deaths from Cholera for a series of years for any other city than Philadelphia, in which we find that during the seven years ending January 1, 1832, 1587 individuals are reported to have died of that disease. Of this number 67 were adults and 1520 children.*

* See Appendix.

CHAPTER II.

The first cause of Cholera is not known.—It is at any rate chiefly dangerous by the aid of the common causes of disease.—Atmospheric changes preceding the appearance of Cholera.—Influence of localities and modes of living on the production of the Disease.—Means of prevention stated.—Quarantine and similarly restrictive measures utterly useless, and always injurious.—Cholera is not Contagious.—It is not transmissible by Persons or Goods.

The cause by the operation of which the common and appreciable causes of disease give rise to Cholera is unknown to us. That it is in the atmosphere we have every reason to believe, but in what state or how combined, we cannot with any certainty ascertain. It is, however, encouraging for us to know, as we now positively do, from all which has transpired in the history of the disease, that the concealed general or aerial cause is comparatively harmless, unless effect is given to it by our subjection to evident modifying agencies.

Preceding and accompanying the appearance of the Cholera in a country or city, there have been deviations from the usual state of the weather and season—unwonted vicissitudes or extremes, with changes in the electrical state of the atmosphere. These would not probably be of themselves adequate to the production of Cholera but for the additional predisposing cause of unfavourable localities. The chief home and seat of Cholera is in low damp situations—on the banks of rivers or near pools and ponds of water,—or which are encumbered with vegetable remains, and filth of any kind.—Those parts of cities thus situated and circumstanced, have always suffered most, and sometimes been the exclusive seats of the disease. In all the chief cities of Hindostan, as in Calcutta, Madras, Bombay, Seringapatam, &c. &c.; of Russia, as in Moscow, St. Petersburg, Astracan; of Germany, as in Vienna, Breslau, Berlin, Hamburgh; of France, as in Paris and other places; of Great Britain and Ireland, as in London, Sunderland, Newcastle, Gateshead, Musselburgh, Dublin, Cork, &c.; this fact has been placed beyond doubt.

In Montreal, Quebec, and other places along the St. Lawrence, similar testimony has been afforded. Additional intensity is given to unfavourable locality by narrow streets, nume-

rous small and ill-ventilated houses, crowded with inhabitants. Low underground lodgings increase greatly the risk of their inmates having the disease, and the danger of its terminating in death.

Experience has also fully shown that in regard to the manner of living, the intemperate, the devotedly sensual in any way, those unclean in their persons, and who are deprived of a suitable supply of wholesome aliment, are peculiarly liable to the disease, and to perish under its attack. The drunkard has every where been singled out as the victim by the disease, on its first appearing in a place. The comparative exemption enjoyed by females, has been entirely lost to them by a dissolute mode of life. Women of this class have been among the foremost sufferers from Cholera.

Food of a bad quality, irritating the stomach and bowels, has often proved an exciting cause of the Cholera. In India, the crops of rice fell short and were damaged, and the inhabitants whose chief reliance for nutriment was on this grain, suffered dreadfully from the disease. Similar deficiencies and badness of quality in the wheat in Russia and Poland, were attended with the like results. Wherever watery fruits and vegetables were largely used and relied on as food, such as cucumbers, melons, cabbages, &c. the disease committed great ravages. Meats, which, though nutritive, task excessively the digestive powers of the stomach, are to be avoided, such as fat pork, smoked beef, lobsters, and crabs.

Among drinks, distilled liquors are especially pernicious. At all times improper for a habitual beverage, they are little short of poison when thus used in seasons of Epidemic Cholera. Water, under all circumstances, the best drink for mankind, may be given of such temperatures, and so prepared by boiling, as to be adapted to every kind of stomach, and to prove both safer and more healthful than any other liquid whatever.

Any sudden or considerable debility of the nervous system is to be greatly dreaded, as of itself laying the body open to an attack of Cholera. On this account, anxiety, fear, and the depressing passions in general, should not be allowed an abiding place in our minds. Many have been destroyed by fear alone—but on the same ground as that on which a tranquil mind is recommended to be preserved, an equable state of the senses and functions generally should be maintained, by regular hours of sleep—regularity of meals—and the accustomed daily exercise.

Long exposure to the sun, and great fatigue, have been found to be powerfully contributing causes of Cholera. If circumstances require imperiously such an exposure, additional circumspection is to be exercised in the manner of living in other respects, and an especial avoidance of the night air and dews, or of getting wet with rain.

The means of preventing an attack of Cholera readily suggest themselves to the reader, after he has been made acquainted with the causes of the disease. The preventive and precautionary measures will consist in a careful avoidance of those situations in which the air is foul, stagnant, and loaded with moisture, and of every thing which has a tendency to reduce the energies of the system, either by over excitement or direct debility, and to impede the functions of the skin, or to induce disturbance of the digestive canal.

The first and most important rule for the avoidance of Cholera is to preserve habits of strict temperance—no excess of any kind to be indulged in, nor experiments made of what the body will endure, either in the way of abstinence or repletion.

The next rule is to observe the strictest cleanliness of person, clothes, and habitation.

The third rule is to preserve the body by means of warm clothing, from the sudden impression of cold following heat, or cold with moisture—more care is demanded than under ordinary circumstances, and garments of cotton or still better of woollen, next the skin, should be worn, even though they may be thought a little too oppressive. The feet should, above all, be preserved warm and dry.

An avoidance of late hours, crowded assemblies, long continued mental exertion and depression, will be so many circumstances worthy of attention by those who would diminish the chances of an attack of Cholera.

Another important rule is not to sleep in damp beds, or in low, damp, ill-ventilated apartments, and to shun exposure to the night air of swampy or marshy districts.

In fine, no medicine ought to be taken during the prevalence of Cholera in a place, without proper medical advice.—All pretended preventives and specifics for the disease, offered by advertising quacks; ought to be ranked among the most effectual means of inducing an attack of the disease. During the prevalence of the late epidemic at Montreal, the authorities very judiciously forbade apothecaries making up and vending

without medical prescription, the medicines and nostrums eagerly sought after, with the hope of preventing or arresting the disease. Time is invaluable in Cholera, and much of the success in curing the disease, will depend on the early administration of suitable remedies. But urgent as may be the demand for assistance, it ought not to be rendered at mere hazard—with the risk often of increasing in place of diminishing the danger of the patient.

We have said nothing as yet of the proper course to be pursued by our public authorities in order to prevent the *introduction* of the disease into this country. Believing as we do, that all the facts connected with the rise and progress of the disease prove it to be an epidemic, depending upon some peculiar morbid change in the constitution of the atmosphere, we conceive that any attempt to exclude the disease from amongst us by quarantine regulations, which are always injurious to the commercial interests of a nation, or by a system of absolute non-intercourse with those countries where the disease prevails, would be as ridiculous as it would be unsuccessful. We have seen what has been the result of these means, when carried into execution with all the strictness which it was in the power of the absolute monarchs of the North of Europe to enforce. In no instance have they succeeded in staying the progress of the pestilence, but have undoubtedly, in many instances, augmented the misery and sufferings of the people, and the number of victims to the disease. They have, in fact, been in the end entirely abandoned as worse than useless. But though the power of the Government cannot be exerted to guard our shores from the approach of the epidemic, it may be exerted in such a manner as to disarm the disease of much of its malignity, and prevent its extensive spread amongst us. This may be done by establishing at home, and without delay, an enlightened system of medical police; by taking effective measures to ensure the cleanliness and proper ventilation of our cities and their suburbs; by enforcing upon every class the importance of temperance, and especially of abstinence from every species of intoxicating drinks; by promoting by every possible means the comforts of the poor; by preventing their exposure to excessive fatigue, to cold and dampness, and to the noxious atmosphere of filthy, ill-ventilated, and crowded dwellings, and by endeavouring to supply them with food which is at once cheap, sufficient in quantity, and wholesome in quality; and withal, by endeavouring continually, instead of ex-

citing unnecessary alarm, to tranquillize and strengthen the public mind, and to inspire confidence in all classes of our citizens. So far as these important points are carried into execution, we may rest assured that much of the danger of the introduction of the Cholera into our country will be removed.*

After the clear light in which the true epidemic character of Cholera has been exhibited in the Report of the College of Physicians of Philadelphia, it is hardly necessary for us, in this place, to strengthen, by many additional facts, the conclusions at which that body arrived, viz. that the disease is not contagious. A very large majority of physicians and surgeons of India are decidedly of the same opinion; their observations led them to the following inferences:—

1st. That medical men, hospital assistants, &c. were not more liable to take the disease than the rest of the community, —in many instances less so.

2d. That it was not communicated by the clothing and beds of the sick to healthy subjects, or even to those labouring under the disease.

3d. Regiments, marching from one station to another, get it all of a sudden, on reaching a certain spot, and the disease as suddenly disappears in a day or two, after changing their ground.

4th. It appears suddenly in a place, continues a week or two, and as suddenly disappears.

5th. Particular parts of a station, or camp, are attacked in preference to others, when the communication is unrestricted.

6th. Banks of rivers and water-courses are more obnoxious than high and dry situations.

7th. On a change of the weather, the disease is sometimes arrested.

8th. The disease passes by intermediate towns and villages, and seizes on more distant ones—a fact inexplicable on the principle of contagion.

9th. Seclusion from, and non-intercourse with the infected, seldom or ever afford security against the disease.

* The following extract from the official regulations, issued by the Austrian Government, will afford a useful hint to our authorities at home. “The authorities of different towns are enjoined to keep a rigorous watch over all taverns, inns, and houses of entertainment, as well as over all provision shops, to prevent, as far as possible, intemperance among the people, and the sale of unwholesome food; and they are particularly required to ascertain the good quality of the bread delivered by the bakers.”

10th. The crew of a ship from England took the disease immediately on her coming to anchor in Bombay harbour, before there was any communication with the shore. She had passed up along the Malabar coast, about seven or ten miles distant from the shore. This ought to set the question at rest forever, as showing the power of atmospheric influence in producing the disease.

“In one of our visitations,” says Dr. Meikle, long a medical officer in active service in India, “two or three companies on the right of the line were attacked, and there it continued for upwards of a month, without attacking a single individual in the lines of the other companies. *They were daily exercised together, went to the same bazaar for their food, and drew water out of the same well.*” “At some ferries of particular rivers, few detachments have halted without suffering. *The disease has, in these cases, broken out in the tent nearest the river, leaving all the rest untouched.*”

In Europe, two series of facts, relating to the local origin and spread of the disease have transpired:—First, the best regulated restrictive measures, by sanitary cordons, and rigid quarantines, were of no avail in warding off the disease from Astracan, Moscow, St. Petersburg, Dantzic, Berlin, Breslau, Vienna, Hamburgh, Paris, Sunderland, Newcastle, Cairo, and Alexandria. If these measures could ever be hoped to avail, it would have been when enforced, as in Russia, Austria, and Prussia, with the whole authority and power of the governments of those countries.

Secondly, it has been shown by official documents, that Cholera broke out and attacked persons, citizens respectively of Astracan, Moscow, St. Petersburg, Riga, Dantzic, Warsaw, Berlin, Breslau, Vienna, Hamburgh, Paris, Cairo, and Alexandria, who had had no intercourse with persons from abroad, nor with any who had been or then were affected with the Cholera. Moreover, the disease attacked, within the period of a few hours, persons in different and remote parts of these cities, who could not possibly have affected each other. The Cholera appeared first in England, in the town of Sunderland, notwithstanding guard ships and quarantine; and in its springing up suddenly in other towns in England and Scotland, could not be traced to a foreign source. For weeks, sometimes months, before the breaking out of the Cholera in its epidemic and virulent variety, sporadic cases had occurred, and there was ob-

served a great tendency to gastric and intestinal disturbance, and often a troublesome diarrhœa.

In the language of Dr. Kirk, of Greenock, we would say, "No man who carefully examines the habitudes of this disease without prejudice and prepossession, can come to any other conclusion but that, in all great irruptions of it, it is an epidemic, depending on atmospherical and malaria influence. Dr. Lawrie's most graphic and excellent description of the disease at Gateshead, and Gateshead Fell, need only to be read by any unprejudiced man to convince him that the unfortunates seized on the morning of the 26th December, were smitten by an atmospherical epidemic, and not by contagion. 'The inhabitants of Gateshead,' says Dr. L. 'fell asleep on the 25th December, in perfect security, and devoid of panic, but before the sun rose on the 26th, fifty-five individuals had been seized, thirty-two of whom were destined not to see it set.' I have no doubt that a predisposition from the state of the atmosphere exists in every devoted locality of Cholera, for a length of time before it actually supervenes."

Many who died of Cholera at Newcastle, says Mr. Lizars, of Edinburgh, were dissected, and some even 16 hours after death, without propagating contagion; indeed, with the exception of one, all the practitioners, upwards of fifty in number, are non-contagionists. Dr. Fyfe, of Gateshead, found in 67 cases, that 44 of these were single individuals of families, varying from three to eight, many of them sleeping in the same bed with those sick with cholera. There was unlimited intercourse; nay, it was impossible to separate the diseased from the healthy.

A similar view of the disease, as it recently prevailed at Montreal, is entertained by the physicians of that place. Dr. Kane, of Plattsburg, in his Report from that city, in reply to the question, Is the Cholera contagious? says—

"1st. Many cases of Cholera appeared in the city six weeks previous to the 10th inst. (June) and therefore, long before shipping and emigrants arrived. The disease, however, subsided in the course of ten days or two weeks, after which, until the 10th inst. no cases appeared.

"2d. When the disease appeared on the 10th, it did so, to use the language of some of the physicians, 'like a shower of hail,' simultaneously all over the suburbs of the city, without any possible communications between the subjects of its attacks. It did not commence among the emigrants, and thence spread as from a centre to a circumference over the city.

“ 3d. It cannot in any instance be traced to contagion. Nurses, and those who are among the sick much of the time, are not more frequently attacked with Cholera than those who are not exposed.”

The first official notice by the Board of Health, of the Cholera in New York, July 5, shows 21 cases, of which there were three in the Park Hospital, two in the Bellevue Hospital, one in the Alms House, and twelve in different streets in the lower part of the city. It is utterly impossible to prove, nor is it pretended to be believed, that these individuals were attacked in succession, after intercourse with others sick with Cholera. The disease there, as in all the other cities, was evidently of home origin.

CHAPTER III.

Symptoms of common Cholera.—Alleged but not proved difference between the essential characters of this and Epidemic Cholera.—Symptoms of the latter.—Great importance of attention to the premonitory symptoms of Epidemic or Spasmodic Cholera.—Among the chief of these, constituting a disorder in itself, is Diarrhœa.—Functions chiefly disturbed by Cholera.—Second, or febrile stage of the Disease, being the re-action following depression and collapse.

The prominent symptoms of Cholera are repeated discharges from the stomach and bowels of a vitiated fluid, various in appearance. In violent cases these discharges are accompanied with spasmodic pains in the bowels and limbs, paleness and contraction of the countenance, coldness of the extremities, and rapid exhaustion of the energies of the system.

The term Cholera, by which the disease is designated, is a complete misnomer. So far from consisting in a morbid or excessive discharge of bile, as its name implies, in almost every case of Cholera the secretion of bile is at first deficient. In the milder forms of the disease, after a few hours continuance, bilious evacuations do, it is true, take place; but this, so far from constituting an essential feature of the complaint, is, on the contrary, in general; an indication of its speedy and favourable termination. In all violent attacks of Cholera, there is a total absence of bile in the evacuations, which are at first thin and watery, subsequently like the washings of fresh meat—sometimes, again, they are whitish, and of a mucilaginous appearance, like rice water or thin starch, at others, dark coloured or variegated.

The Cholera, as it presents itself under ordinary circumstances, is marked by various degrees of violence. It is so slight an affection in some instances, as to terminate spontaneously in a few hours; in others, it causes to the patient the most intense suffering for a considerable length of time, and when removed by an appropriate treatment leaves him in a state of extreme prostration, from which he slowly recovers; while in other cases which have fallen under our notice, we have known it to destroy the patient almost immediately; death being preceded by violent spasms of the muscles of the abdomen and extremities; deadly paleness of the countenance; a shrinking of the features and icy coldness of the whole surface of the body. The symptoms, in fact, differing in nothing

from those observed in the Spasmodic Cholera which is now prevailing as an epidemic.

The latter disease, it is true, has by several of the English physicians been supposed to be essentially different from that met with in England and other temperate climates, during summer and autumn, as well as from the ordinary endemic Cholera of warm climates. The arguments, however, by which this specific difference is attempted to be established, are altogether invalid. It has been said that in ordinary Cholera, the evacuations are of a bilious character, and frequently unaccompanied with spasms, while in the epidemic disease the evacuations consist invariably of a watery fluid, in which no admixture of bile can be detected, and are accompanied with violent spasms of various muscles of the trunk and limbs. The former is asserted to be a mild disease, readily removed by an appropriate treatment, and seldom fatal, whereas, the latter is always marked by symptoms of extreme violence, is altogether unmanageable, and rapidly destroys life in the greater number of those attacked by it.

Most, if not all, of the destructive characteristics thus attempted to be drawn between the two forms of Cholera, have, in fact, no existence, or at least they are founded upon a very superficial acquaintance with the phenomena of the disease as it occurs in various situations and climates. The physicians of Montreal entertain a correct view of the subject, when they regard the Cholera, which recently prevailed in that city, as differing in no respect from the endemic cholera of the United States and the Canadas, save that it is now an epidemic. In both, the same organs are affected, and in the same manner, and the same phenomena are present.

We have already pointed out the error of supposing that the discharges in ordinary cases of Cholera are from the first invariably bilious: it is only in mild cases that a copious secretion and consequent discharge of bile speedily occur and put an end to the disease. In all instances in which the symptoms are in any degree violent, there is an entire absence of bile in the matters evacuated. To this fact nearly every writer has borne testimony, who has described the disease from personal observation. Celsus describes the evacuations in Cholera as "at first like water, afterwards as though fresh flesh had been washed in it—sometimes white,"* &c.

* Celsus, it is true, applies the term *bilis* to the evacuations in this disease; but there is reason to believe that the Latins made use of that term to design-

Sydenham does not allude, in his description of the severe form of Cholera which he witnessed, to the existence of bile in the evacuations, but merely denominates them “vitiated humours.” Bateman remarks that, in Cholera the evacuations are at first “thin and watery,” but in the course of a few hours “pure bile” is discharged: and Johnson, when treating of the Cholera of tropical climates, declares that in all cases of the disease there is a diminution, in many “a total suppression of the biliary secretion.” We can confidently affirm, from our own experience, that in the majority of the violent cases which we have witnessed, the discharges were of the same watery appearance, until the disease took a favourable turn.†

The greater intensity of the symptoms in the present Epidemic Cholera—its rapid progress—wide spread, and the appalling mortality by which it has been so generally attended, afford no just grounds for describing it as a specific disease. They merely indicate a more violent grade of the malady, depending upon causes having a wider extension than those by which Cholera is usually induced. Cholera has frequently occurred epidemically before the present period. Even in sporadic cases it presents every degree of violence; from the most trifling to that in which death is induced in a very short period.

Premonitory Symptoms of Cholera.—On an early attention to the symptoms of this first or forming stage of the disease, will greatly depend the favourable issue of the case, and of course the life of the patient. The patient complains of lassitude. He has frequently partial uneasiness in the region of the stomach; but this not to such a degree as to alarm him. He has frequent evacuations from the bowels—from two to a dozen times a day—not attended with much griping. His countenance is sharp and dark. He knows not of this symptom, and it is only recognizable to the eye of experience. Occasional nausea may oppress him. But this is not a very common symptom. These symptoms may continue, varying in severity, from one to ten days, before the second stage of the disorder supervenes. The eva-

nate fluid evacuations generally, and not the bile alone, which was invariably denoted by the term *fel*.

† In the histories of the Cholera during its prevalence in India, we find frequent mention of green or greenish discharges, (vide Bombay Report and Mr. Scott’s Madras Report,) and Mr. Curtis, as well as Mr. Orton and others, say expressly, that, in mild cases, the discharges in the Epidemic Cholera of the East were bilious. (See Curtis on the Diseases of India, p. 66, and Orton’s Essay on the Epidemic Cholera, p. 71.)

cuations at the first are generally of a dark brown or blackish hue. As the looseness continues, they gradually become less and less of a natural appearance, until they assume the consistence and aspect of dirty water. Some headache, cramp of the fingers, toes, and abdomen, and almost always slight giddiness and ringing of the ears, accompany these symptoms. Sometimes an intervening two or three days of costiveness supervenes, which is followed again by the diarrhœa, and in a few hours collapse supervenes, and in general nausea and vomiting. On the prompt appreciation of the nature of this diarrhœa, and timely application to a physician, will greatly depend the issue of the cure. Dr. Kirk says that it was found, from regular records of upwards of 4000 patients, to prevail in all.*

Symptoms of marked Cholera.—From among the numerous minute and graphic accounts which have been published of the phenomena by which the epidemic Cholera is accompanied, from its invasion until its termination, it is somewhat difficult to make a selection, but as our desire is, rather to present a general summary of the symptoms, than a detailed account of every trifling deviation from the ordinary course of the disease, we shall follow very closely the very excellent description presented to us by Mr. Scott in the Madras Report.

The attack of Cholera generally takes place in the night, or towards morning. The patient becomes sick at stomach, vomits, and his bowels are at the same time evacuated. This evacuation is of a nature peculiar to the disease—the entire intestinal tube, seems to be at once emptied of its fœcal or solid contents, and an indescribable but most subduing feeling of exhaustion, sinking, and emptiness is produced. Faintness supervenes, the skin becomes cold, and there is frequently giddiness, and ringing in the ears; the powers of locomotion are generally soon arrested; spasmodic contractions or twitchings of the muscles of the fingers and toes are felt; and these affections gradually extend along the limbs, to the trunk of the body; they partake both of the clonic and tonic spasm, but the clonic form chiefly prevails. In other words, they consist more generally of permanent contraction than of convulsive movements of the muscular fibres. The pulse, from the first, is small, weak, and accelerated, and, after a certain interval, but especially on the accession of spasms, or of severe vomiting, it

* See Appendix, in which precautions, based upon these premonitory symptoms, are given by Drs. Jackson, Meigs, and Harlan, of Philadelphia, after their visit to Montreal.

sinks suddenly, so as to be speedily lost in all the external parts. The skin, which, from the commencement of the disease, is below the natural temperature, becomes colder and colder; it is very rarely dry; generally covered with a profuse cold sweat, or with a clammy moisture. In Europeans the skin often assumes a livid hue; the whole surface appears collapsed, the lips become blue, the nails present a similar tint, and the skin of the feet and hands becomes much corrugated, and exhibits a sodden appearance; in this state the skin is insensible, even to the action of chemical agents; yet the patient generally complains of oppressive heat on the surface, and wishes to throw off the bed clothes; the eyes sink in their orbits and are surrounded with a livid circle; the corneæ become flaccid, the conjunctiva frequently suffused with blood; the features of the face collapse, and the whole countenance assumes a cadaverous aspect, strikingly characteristic of the disease. There is almost always urgent thirst, and desire for cold drink, although the mouth be not usually parched. The tongue is moist, whitish and cold; a distressing sense of pain, and of burning heat at the epigastrium are common; little or no urine, bile, or saliva is secreted; the voice becomes feeble, hollow, and unnatural; the respiration is oppressed, and generally slow, and the breath of the patient deficient in heat.

During the progress of these symptoms the stomach and bowels are very variously affected. After the first discharges by vomiting and purging, however severe these symptoms may be, the matter evacuated is always watery; and in a great proportion of cases it is colourless, inodorous, and often homogeneous. In some it is turbid, resembling muddy water; in others, it is of a yellowish or greenish hue. A very common appearance is that which has been emphatically called the "*congee stools*," or like rice water, an appearance produced by numerous mucous flakes, floating in the colourless watery, or serous part of the evacuation. The discharges from the stomach, and those from the bowels do not appear to differ, excepting in the former being mixed with portions of the food which may have been eaten. Neither the vomiting nor the purging are symptoms of long continuance; they are either obviated by art, or the body becomes unable to perform the violent actions; and they, together with the spasms, disappear a considerable time before death. If blood be drawn, it is always dark, or almost black, ropy, and generally flows slowly and with difficulty. Towards the close of the attack, jactation, or restlessness, comes on, with evident internal anxiety and distress; and death takes place,

often in ten or twelve, generally within eighteen or twenty hours from the commencement of the attack.

During all this mortal struggle and commotion in the body, the mind remains clear, and its functions undisturbed, almost to the last moment of existence. The patient, though sunk and overwhelmed, listless, averse to speak; and impatient of disturbance, still retains the power of thinking, and of expressing his thoughts, as long as his organs are obedient to his will; such is the most ordinary course of the Epidemic Cholera, where its tendency to death is not checked by art.

Cholera, however, like other diseases, has presented considerable variety in its symptoms; thus, it may on one occasion, be distinguished throughout by the absence of vomiting, and by the prevalence of purging; on another, by the excess of vomiting; and, though more rarely, by the absence of purging. Spasm may be generally present in one instance: in another, it may not be distinguishable. A frequent variety, the worst of all, is, that which is marked by a very slight commotion in the system—in which there is no vomiting, hardly any purging, perhaps one or two loose stools; no perceptible spasm, no pain of any kind: a mortal coldness, with arrest of circulation, comes on from the beginning, and the patient dies without a struggle.

Vomiting is sometimes, as already remarked, entirely absent, or if it has been present, soon ceases from an atonic state of the stomach, under which that organ receives and retains whatever may be poured into it, as if it were really a dead substance. Purging is a more constant symptom than vomiting, and in a large majority of cases, it is the first in the order of occurrence; but being a less striking deviation from a state of health, than vomiting, which instantly arrests the attention, it has usually been spoken of as occurring subsequently to the latter. Purging has been very rarely absent altogether—its absence appears, indeed, to denote a peculiar degree of malignancy in the attack. There is seldom much griping or tenesmus, although the calls to the stool are very sudden and irresistible. They also sometimes take place simultaneously with vomiting, spasm, and a suspension of the pulsation at the wrist; as if all these symptoms originated at the instant, from one common cause. In advanced stages of the disease purging generally ceases, but in many cases a discharge of watery fluid takes place on every change of posture. The matters evacuated after the first emptying of the bowels, have been occasionally ob-

served to be greenish or yellowish, turbid, of a frothy appearance, like yeast, and sometimes bloody; but by far the most common appearance is, that of pure serum, so thin and colourless as not to leave a stain on the patient's linen. The next in order of frequency, is the congee-like fluid; the mucus is at times so thoroughly mixed, however, with the serum, as to give the whole the appearance of milk. The quantity of the clear watery fluid, which is sometimes discharged, is very great, and were it uniformly so, it might afford us an easy solution of the debility, thirst, thickness of blood, and other symptoms; but it is unquestionable, that the most fatal and rapid cases, are by no means those which are distinguished by excessive discharges. Death, on the contrary, has ensued in innumerable instances after one or two watery stools, without the development of any other symptom affecting the natural functions. Collapse has even come on before any evacuation by stool had taken place.

The undisturbed state of the mind in this disease, has been the subject of general remark: instances are not wanting of patients being able to walk, and to perform many of their usual avocations, even after the circulation has been so much arrested, that the pulse has not been discerned at the wrist: the cases here alluded to, are those chiefly, in which it has begun by an insidious watery purging: and many lives have been lost in consequence of the patients, under these fallacious appearances, not having taken early alarm, and applied for medical aid. In other cases again, the animal functions appear to have been early impaired, and the prostration of strength to have preceded most of the symptoms. The voice, in general, partakes of the debility prevailing in the other functions; it is usually noticed as being feeble, often almost inaudible. Deafness has also been remarked, in some instances, to have been completely established. Coma does occasionally occur, especially towards the termination of the case, when it is fatal: but delirium has seldom, or never been observed, unless as a sequela of Cholera.

Spasm has been held to be so essential a feature of the Epidemic Cholera, as to confer on it a specific name: in so far, however, as relates to the muscles of voluntary motion, and it is that description of spasm only to which we now refer, no symptom is more frequently wanting. Spasms of the muscles chiefly accompany those cases in which there is a sensible and violent commotion of the system—hence they are more fre-

quently found in cases where Europeans are the subjects of the disease, than when it attacks the natives of India, and in robust patients, more frequently than in the weakly. In the low and most dangerous form of Cholera, whether in the European or Indian, spasm is generally wanting, or is present in a very slight degree. The muscles most commonly affected, are those of the toes and feet, and of the calves of the legs: next to these, the corresponding muscles of the superior extremities, then those of the thighs and arms—and lastly, those of the trunk; producing various distressing sensations to the patient. Dr. Craigie, in his account of the disease as it prevailed in Newburn, (Eng.) says—“The cramps were observed chiefly in the *gastrocnemius* and *soleus* of the leg, in the *biceps flexor* of the thigh, and in the *recti* of the abdomen. In one or two instances I thought I felt the adductors of the thigh affected; and I think, had I examined a greater number of cases, I should have found this more frequently. But it is remarkable that none of the extensors of the thigh were ever seen cramped; and if those of the foot were affected, they also escaped notice. In the arms I never found the muscles affected with distinct cramps, but only thrown into spasmodic twitches. It is deserving of remark on this point, that in several instances the first indications of choleric attacks were twitching of the fingers and toes; and some persons who resisted all the other phenomena of the disease were assailed by this. A man who acted as gardener and manservant to the Reverend Mr. Edmonston, and whose name has not been put down in my notes, complained, on Sunday the 15th, of twitches of the fingers and hands, for which some gentle laxative remedy was in the mean time ordered. The following day, about two o’clock, these twitches had rather increased, but not to such an extent as to require very active measures. At four o’clock, as we were quitting the village, he ran up to Mr. Fife’s carriage to say, that he had been, since two, attacked with several loose stools, and to request assistance, which was immediately ordered for him.”

Of all the symptoms of Cholera, none is so invariably present, nor indeed so truly essential and destructive, as the immediate sinking of the circulation. It must, nevertheless, be admitted, that, where instant remedial measures have been successfully practised, this symptom may not have developed itself, and that there are even cases where an excited vascular action has been observed to accompany the first perturbation of the sys-

tem in Cholera. Some intelligent practitioners have entertained doubts whether such cases belong indeed to this disease: it is, however, to be remembered, that these are precisely the cases which yield most certainly and readily to appropriate remedies, and it consequently follows, that the physician can seldom have an opportunity of observing whether or not this form of Cholera will pass into a more aggravated stage. Cases however, have occurred, in which such degeneration has taken place, and it has then been followed by death. The symptoms of excitement have likewise principally occurred among soldiers, in whom an effect upon the circulation may have been produced by the quantity of ardent spirits they are in the habit of drinking daily.

The period at which a marked diminution of vascular action takes place, is somewhat various—the pulse sometimes keeps up tolerably for several hours, though very rarely: it more generally becomes small and accelerated at an early stage, and on the accession of spasm or vomiting, suddenly ceases to be distinguishable in the extremities. The length of time during which a patient will sometimes live in a pulseless state, is extraordinary.

Thirst and sense of heat, or burning in the region of the stomach, are generally connected together, and form very prominent and constant symptoms of Cholera; yet not only in individual cases, but even in epidemic visitations, these symptoms have often been altogether wanting. Even when they are present, in the highest degree, the mouth is not parched, nor the tongue often dry; on the contrary, there seems in general no want of moisture in these parts. The sense of thirst seems to subdue all other feelings—cold water is constantly craved and eagerly swallowed.

The state of the skin is cold, generally clammy, and often covered with profuse cold sweats: nevertheless, varieties occur in this, as in other symptoms of Cholera—the skin is sometimes observed to be dry, though cold; and sometimes of a natural, and even in some rare cases, of preternatural warmth. An increase of temperature has been repeatedly observed to take place just before death; but the development of heat appears to be confined then to the trunk and head; and, in almost all cases, this partial development of heat is found to be a fatal symptom: it is entirely unconnected with any restoration of the energy of the blood-vessels, or any improvement in the function of respiration. Often at a very early stage of Cholera, leeches

cannot draw blood from the skin; when the sweat is thin, it is usually poured out in large quantities from the whole surface of the body, but when thick or clammy, it is more partial, and generally confined to the trunk and head. The action of the vapour and hot baths, seems unquestionably to increase the exudation or secretion from the skin: and the application of dry heat, as the natural temperature of the skin augments, appears to restrain these discharges. The perspiration or moisture is often free from odour; at other times it has a fetid, sour, or curdy smell, which has been said to be peculiarly disagreeable, and to "hang about the nostrils" of the bystander.

That remarkable shrinking of the features of the face, which has acquired the emphatic term of the "true Cholera countenance," appears in every case not quickly cut short by medicine. This expression of countenance, which conveys so truly that of death itself, cannot be mistaken, and by an attentive observer it will be perceived that a similar shrinking takes place throughout the limbs, and all the projecting parts of the body.

Respiration is not usually interrupted in the early stages of Cholera. In many cases terminating in death, respiration has gone on in its mechanical part, with little or no interruption, excepting that it becomes more and more slow. Numerous cases, on the other hand, are noticed, occurring especially in Europeans, where the interruption of respiration was most distressing, and could only be compared to the most violent attacks of asthma. Although the breath is stated, in many reports, to have been deficient in heat, it is not clear that this is a general symptom, nor is it understood that this coldness is more particularly observed in cases of difficult and laborious respiration, than in those where the function seemed to be at least mechanically performed without interruption.

No symptoms of Cholera are so uniform in their appearance and progress, as those connected with the blood and its circulation. It is established by undoubted evidence, that the blood of patients attacked with Cholera, is of an unnaturally dark colour and thick consistence. These changes in the circulation of the blood, are likewise fully proved to be in direct ratio with the duration of the disease.

In a great majority of the reports of the physicians in India, it is stated unequivocally, that after a certain quantity of dark and thick blood has been abstracted, it is usual for its colour to become lighter, and its consistency less thick, and for the circulation to revive—such appearances always affording ground

for a proportionably favourable opinion as to the termination of the case. In many instances, however, no such changes have been observed to accompany the operation of bleeding, and yet the result of the case was favourable. The blood is generally found to be less changed in appearance, in those cases of Cholera which have been ushered in with symptoms of excitement, than where the collapsed state of the system has occurred at an early period. The blood has been occasionally found on dissection, to be of as dark colour in the left, as in the right side of the heart—affording reason for believing that in the whole arterial system, it was equally changed. The temporal artery having been frequently opened, the blood was found to be dark and thick like the blood of the veins.

In the natives of India, in whom respiration is pretty generally free, until the very last stage, the colour and consistence of the blood in the instances in which venesection was performed, has been very uniformly found to be dark, whether excessive discharges prevailed or not. In the majority of cases, the secretion of urine is diminished—and in violent cases it is entirely suspended throughout the attack.

When medical aid is early administered, and the constitution of the patient is otherwise healthy, the recovery from an attack of Cholera is so wonderfully rapid, as perhaps to be decisive of the disease being essentially unconnected with any very decided morbid change in the several organs of the body. In the natives of India, in whom there is ordinarily very little tendency to inflammation, the recovery from Cholera is generally so speedy and perfect, that it can only be compared to recovery from fainting, colic, and diseases of a similar character; but in Europeans, in whom there is a much greater tendency to inflammation, and determination to some of the internal organs, the recovery from the disease is by no means so sudden or perfect; on the contrary, it is too often complicated with affections as various, as the diseases of various internal organs are known to be in India. The most frequent of the sequelæ of Cholera are affections of the intestines, of the brain, of the liver, and of the stomach. When Cholera, however, is of long continuance, and when the congestions appear to have been thoroughly established, few, either Europeans or natives, who outlive the attack, are restored to health without considerable difficulty. It has already been remarked, that recovery from an attack of Cholera, is indicated by the return of heat to the surface of the body and rising of the pulse; a deceitful calm, how-

ever, sometimes attends these favourable appearances, which too often mocks our hopes and expectations, and, on the contrary, patients have been observed to remain for one, two, and even three days, in a state of the greatest collapse, and yet, contrary to all expectation, have recovered.

The tendency to death in Cholera consists in a general suspension of the natural, and gradual cessation of the vital functions, rather than in the establishment of morbid actions. Cases have been remarked, where the vital functions have been more suddenly overcome, and where death took place, before the usual development of the symptoms of the disease. Fatal terminations likewise occur from topical inflammations supervening, as of the stomach, intestines, or liver. The intestinal canal seems especially obnoxious to the effects of Cholera—numbers of those attacked with it having been subsequently seized with dysentery.

Such are the general symptoms of Cholera as it presented itself in the different districts of India, and they correspond precisely with those observed in the disease during its prevalence in Russia, Poland, the north of Europe, the Canadas, &c. This is proved by the history of the disease which is contained in the circular distributed by the Austrian Government, and the elaborate epitome of its symptoms, transmitted by Dr. Keir, of Moscow, to the British Government, and in the accounts transmitted from Montreal and Quebec. It is needless to dwell on this topic, with the view of establishing the identity of the symptoms of the Epidemic Cholera which prevailed in Europe, with those remarked by the English practitioners in the Cholera of the East Indies. All the Russian and German reports agree, that in the generality of cases there were the same excessive evacuations upwards and downwards, of a watery turbid fluid, the same collapse of the skin, coldness of the surface, sinking of the pulse, failure of the strength, lividity of the face, shrinking of the features, spasms of the muscles, sense of pain, on pressure on the region of the splanchnic plexus of nerves, entireness of the mental faculties, and blackness and inspissation of the venous blood; that in Europe, as in India, some instances occurred of rapid death, with collapse and spasms, and without vomiting or purging; that in other instances chronic irritation of the bowels continued for a long time after the violence of the disease was broken; and that sometimes, symptoms of cerebral congestion supervened on the violent constitutional disorder which accompanied the intestinal symptoms, and

quickly terminated in coma and death, when not counteracted by an appropriate treatment.

If any decided difference has been observed between the character of Cholera as it prevailed in India, and after its extension into Europe, it consists merely in the gradual amelioration of the disease; the comparatively diminished violence of its symptoms, its less extensive diffusion among the various populations it has visited, and its lessened mortality in proportion to those populations, as the disease has progressed westward into civilized Europe—Poland suffering less than Russia, Austria less than Poland, Prussia less than Austria.

That, however, the Eastern and European Cholera are substantially the same disease, every circumstance with which we are acquainted, tends fully to establish. We have also the evidence in favour of its identity, of various physicians of eminence who have witnessed the Cholera both in India and Europe.

In our description of the symptoms characteristic of an invasion of Cholera, we have not included those of the stage of reaction or *anastasis*.—Our account would, however, be incomplete, were we to omit drawing the attention of our readers to the fact, that Cholera Asphyxia, declared and unmitigated Cholera, ought rather to be regarded as a stage of fever—too often, indeed, a violent and fatal one, than as a separate disease.—The forming stage is marked generally by diarrhœa and some other disturbances of function. The third stage, that of reaction, corresponds with the febrile reaction after the chill of intermittent fevers, or still more, after the stupor, coma, &c. of pernicious or malignant intermittents, as they have been termed. In both cases, the violent or distinct asphyxia of Cholera, and coma of intermittent fever, will kill—in both escape from these may be followed by fever and phlegmasia, which will often destroy the patient.

Mr. Searle, a judicious writer, who witnessed the disease both in India and Poland, observes that “Cholera was generally based upon, or succeeded by, fever of a bilious inflammatory type—in Europe, of a low remittent or typhoidal character. In Europe, the choleric symptoms were less marked than in India, and the succeeding fever evinced less of simple reaction.

“I have said remittent, though the first few days I have generally found it to be intermittent; coming on daily at about the same hour, preceded by coldness of the extremities, quiver-

ing of the lip, and depression of the circulation: but from the excitement of inflammation, which but too frequently becomes developed in the organs previously congested, the intermissions become imperfect, and in consequence, it assumes a remittent, and, from the conjoint debility, a typhoidal form.”

Almost all the cases in Poland, which were neglected or ill-treated at the beginning, lapsed into this form of fever. This is a strong proof that the choleric symptoms are only a stage or form of fever. The following passage is important.

“In reference to the foregoing, and in exhibition of the connexion that subsists between Cholera, fever, and dysentery, I would add the notice of a milder species of the disease, which was, in the month of August, exceedingly prevalent at Warsaw, and where fever and dysentery are, I was informed, annually at the same season extremely common. The following is the best account I could collect from my patients of its insidious mode of attack. A sense of fulness at the præcordia, of languor and incapacity to exertion—mental or bodily, occasionally with giddiness or headache; the latter, however, was often attended with an obscure form of fever, and only felt at some particular hour of the day; a slimy, coated, white, or furred tongue, and which appeared occasionally to be swollen, being indented along its edges by the teeth; or otherwise, an unusually clean, smooth, and red tongue; lips pallid, or of leaden hue; eyes often of a pearly appearance, and surrounded with a brown circle; the countenance sallow; appetite frequently but little impaired, though the digestion was in general imperfect, evinced by flatulence and distention after a meal. Bowels at first constipated, succeeded, however, in general, by relaxation, and this, when attended with inflammation, terminating not unfrequently in bloody muco-purulent evacuations, or, in other words, in dysentery.

“The preceding symptoms, fluctuating with the weather and contingent circumstances, may continue two, three, or more weeks; the individual feeling that he is unwell, but not attaching any importance to his condition, till the depressing influence of the atmosphere, preceding or accompanying wet weather, or an attack of indigestion, succeeding to the use of some improper article of diet—as potatoes, cabbage, sallad, or the like, or drinking too freely of some cold fluid, or fatigue, or exposure to the sun, or cold—develops the attack of Cholera, coming on by purging, or vomiting, succeeded by cramps in the legs, lividity of countenance, cold skin, and feeble pulse:—a

condition which, if the patient recovers, is almost invariably succeeded by fever, of an intermitting or remitting type, coming on daily or oftener, and generally unpreceded by any very marked cold stage, further than a sense of shuddering, tremor, or quivering of the lip, and depression of the circulation. An attack of this kind, it must be obvious, is nothing more than one of fever, based upon torpor of function, and congestion of the liver and chylo-poietic organs: and attributable to the continued respiration of an impure atmosphere of a milder degree than ordinarily gives rise to Cholera, such as results from the imperfect ventilation of the town, and foul state of the drains: or in persons otherwise situated, from some swamp or filth in the neighbourhood of their abodes."

The views which we hold of Cholera, as properly a stage of Cholera fever, are further corroborated in the following extracts from two letters published by Dr. Negri, an intelligent Italian physician, residing in London. They go to show the great resemblance, if not identity between the malignant Cholera and the pernicious fevers, described by Torti, more than 120 years ago.

"Speaking of the character of those fevers, Torti says, 'the pernicious intermittent, more especially that wearing the tertian form, kills about the beginning of the paroxysm, when it is accompanied with violent bilious vomiting and purging of bilious humours, equally vicious both in quality and quantity, being sometimes clear, at others coloured, and occasionally of inspissated greenish bile; to which vomiting and purging are added, hiccup, a hoarse sonorous voice, hollowness of the eyes, pain of stomach, small sweat upon the forehead, weak pulse, and cold or livid extremities—in one word, all the symptoms which usually mark *cholera morbus*; from which, however, this, as it were, *choleric affection*, is to be distinguished; since it is a *mere symptom*, of the fever, the period of which it follows, *as a shadow does a body.*'"

Torti describes a "*febris perniciosa cholericæ*," in which the patient becomes nearly exhausted, "universally chilled, lies supine, with a pulse almost abolished, sunken eyes, and difficult breathing." Dr. Negri also quotes from Mercatus, physician to the King of Spain, who describes a pernicious tertian, presenting the same symptoms as Cholera, and frequently lapsing into a pernicious fever. The following passage from Morton, quoted by Dr. Negri, will be read with interest at the present moment.

“Among the innumerable symptoms attending these fevers, there is none which may not rise to a great height, endangering the life of the patient, so that *typhus fever* (marked in its stages of cold, heat, and sweating) supervenes, rendering it impossible to be distinguished by the *urine, temperature, pulse*, or indeed any other means; but, concealed under the appearance of cold, vomiting, diarrhœa, *cholera morbus*, choleric, or other disease, not unfrequently misleading the physician.”

Torti, as well as Morton, exhibited bark as early as possible, and in large quantities, and this practice is recommended by Dr. Negri, from experience of its good effects in the malarious fevers of Italy. Dr. Negri comes to the conclusion “that the *malignant cholera of our days* belongs to the same class of diseases which was seen by Mercatus in Spain, Torti in Italy, and Morton in England.” He suggests the administration of bark in large doses and early in the disease.

The following case from Torti presents (says Dr. James Johnson) a complete picture of the Sunderland cholera.

“When I reached the patient, he had been several hours labouring under the disease. I found him universally cold as marble, with the pulse altogether, if I may so say, absent, breathing laboriously, and having a leaden-coloured countenance. There was some torpor, but no confusion of intellect, (*he never mentioned delirium*) and his urine was secreted in a small quantity. I prescribed the bark in large doses. A gentle heat soon pervaded his entire frame; the pulse gradually returned; the respiration became natural; the face lost its leaden hue; the urine was secreted in its ordinary quantity, and in three days he was quite recovered.”

CHAPTER IV.

Of the Morbid Appearances detected in the Bodies of those who have died of Cholera.

For the information of our professional readers, we present the following description of the morbid appearances detected after death, in the bodies of those who have died of Cholera. The appearances ordinarily discovered in India are given with considerable minuteness in several of the medical reports. The following description is condensed from the very able Report drawn up by Mr. Scott for the Madras Medical Board.

The external appearance, after death, of European subjects, closely resembles that which they exhibited whilst labouring under the Cholera. The surface is livid, the solids shrunk, the skin of the feet and hands corrugated. There exists no uncommon tendency in the body to putrefaction, nor any characteristic fœtor from the abdominal cavity. The cavities of the body lined with serous membranes, as well as these membranes themselves, presented no particular morbid appearances. The cavities indicated have almost uniformly been found in a natural state, or the deviations from that state which were met with, had manifestly no connexion with Cholera. The surfaces which are lined or covered with mucous membrane, on the contrary, very generally exhibited signs of disease.

The lungs have not unfrequently been found in a natural condition, even in cases where much oppression of respiration had existed previously to death. - Much more generally, however, they were found to be gorged with dark blood, so thick that they have lost their characteristic appearance, assuming more that of liver or spleen; or they were in an opposite condition,—that is, collapsed into an extremely small bulk, and lying in the hollow on each side of the spine, leaving the cavity of the thorax nearly empty. This has been supposed to have arisen from the extrication of a gas, but on piercing the thorax of the dead body under water, no gas escaped. The blood found in the lungs has been always black. The heart, and its larger vessels were found to be distended with blood, but not so generally as

the apparent febleness of their propelling power, and the evident retreat of the blood to the centre, would have led us to expect. The engorgement of the right cavities of the heart with blood is not peculiar to Cholera, but in some cases the left cavities were found filled even with dark or black blood, which we may consider a morbid appearance more peculiar to this disease.

In the abdominal cavity, the peritoneal covering of the viscera presented seldom any morbid appearances; the morbid accumulation of blood in the vessels of the viscera, imparting to it, however, an appearance of turgidity and blueness, which was occasionally evident on its exterior surface. Where the patient has lingered long before death, this membrane occasionally exhibits traces of inflammation. In other cases, the whole intestinal tube presented a blanched appearance, both externally and internally. The stomach and intestines generally preserved their ordinary size. The omentum was not sensibly affected. So various were the morbid changes in the stomach, that upon them no pathological conclusions could be founded. This organ was rarely found empty, or much contracted, nor was any appearance of spasmodic stricture of the pylorus often detected. It did, however, sometimes occur. The contents of the stomach appeared to be chiefly the *ingestæ* in an altered state; in some cases a greenish, yellow, or turbid matter was found. Various appearances, either of active inflammation, or a congested state of the vessels, were noticed, sometimes in one part and sometimes in another. The parts seemed as if they were sphacelated, thickened, softened, and friable,—and, in short, exhibited so great a variety of appearances from a perfectly natural state, to the most morbid condition, that no particular light is shed by them on the nature of the disease.

The intestinal tube was sometimes collapsed, but oftener more or less filled with gas; distended in some points, into bags or pouches, containing a whitish, turbid, dark, or green coloured fluid; and in others presenting the appearance of spastic constriction. The intestines contained no *fœcal* or other solid matters, but very commonly large quantities of a *congee* looking fluid, or of turbid serous matter. The duodenum and occasionally the jejunum, were found loaded with an adherent whitish or greenish mucus, at other times they were found denuded, as it were, of their natural mucus, and often they were perfectly healthy. Traces of bile in the intestines, or of any substances apparently descended from the stomach, were exceedingly rare. Sangui-

neous congestion, and even active inflammation, are stated to have been more common in the bowels than in the stomach; but, on the other hand, instances were very numerous where no such indications were detected. The thoracic duct is stated to have been found empty of chyle. The liver was commonly gorged with blood, but not always; the gall bladder was almost universally found to contain bile, and in the great majority of cases, was even completely filled with it. As is usual with this secretion in cases of retention, it was of a dark colour. Very different states of the gall ducts have been described; cases of constriction and impermeability seeming to be equally numerous with those of an opposite character. The urinary bladder was found, we may say universally, without urine, and very much contracted. The mucous membrane of the bladder and uterus, have been found coated with a whitish coloured fluid. In the spleen, nothing unusual was detected. The vessels of the mesentery were very generally found to be loaded with blood.

In the head, appearances of congestion, and even of extravasation, were frequently observed; but not so uniformly, nor to such an extent, as to require any particular notice. Only one case has been given, where the state of the spinal marrow was examined; and in that, indications of great inflammation were detected in its sheath; the case in which this occurred was, however, in some degree, a mixed one.

It will be useful, in many points of view, to compare the foregoing result of the autopsical examinations by the physicians of India, with the morbid appearances detected after death by the physicians of the north of Europe. For this purpose, we present the following extract from the memoir of Dr. Keir, of Moscow.

In the bodies of those who have died of the Cholera, the extremities in general were more or less livid and contracted, and the skin of the hands and feet corrugated: the features sunk and ghastly. On opening the cranium, the blood vessels of the brain, as well as of its membranes, were more or less turgid, especially towards its base. The arachnoidea had sometimes in several places lost its transparency, and adhered to the pia mater. A fluid in considerable quantity was occasionally found effused between the convolutions of the brain, and more or less of serum in the lateral ventricles. The blood-vessels of the vertebral column and spinal chord were more or less loaded with blood, which was, also, sometimes effused between its arachnoid and pia mater; partial softening of the substance of the chord was

sometimes met with, and marks of inflammatory congestion in the larger nerves. The lungs were generally gorged with dark coloured blood; the cavities of the heart were filled with the same, and frequently contained polypous secretions. In all the dissections at which Dr. Keir was present, very dark coloured blood, which, when spread on a white surface, resembled in colour, that of the darkest cherry, was found in the arch of the aorta, and in other of the arteries. The state of the abdominal organs varied considerably; the stomach and different parts of the intestines were frequently found to be partially, but considerably contracted; the internal surface of the stomach sometimes seemed to be little affected; a whitish or yellow fluid matter, resembling the evacuations was frequently found in different parts of the alimentary canal, which now and then contained a good deal of gas; in other cases, both stomach and intestines bore marks of congestion, and of a sub-inflammatory state, varying from dark coloured spots, of small extent, to several inches, affecting the whole internal circumference of the intestine; the colour of these parts, also, varied considerably, from dark coloured venous congestion, to light rose coloured inflammation. In one case, the internal surface of the stomach was so strongly and so generally tinged of a very dark colour, that it might easily have been mistaken for gangrene. On exposing the stomach between the eye and the light, it was evident that there was neither gangrene nor solution of continuity, but that the dark colour proceeded from a very general and great congestion of very dark coloured blood, in the vessels of the organ. The subject of this case was understood to have died, with symptoms of a typhoid character, after suffering from the usual symptoms of Cholera. Excepting in this case, which was evidently one of congestion, and not of inflammation, Dr. Keir saw nothing in the morbid appearances from which a conclusion could be drawn that inflammation was a very general phenomenon in the alimentary canal, or a common cause of death, however it might, by its presence in the second period of the disease, add to the general irritation, or even, as a consequence of preceding congestion, be itself occasionally the cause of the fatal event. Both the stomach and bowels were frequently of a paler colour than natural, as well internally as externally; but neither thickening nor condensation from inflammation, nor ulceration, destruction of substance, nor abscess, was present in any of the dissections witnessed by Dr. Keir. The liver was generally pretty full of dark coloured blood; the gall bladder

frequently much distended with tenacious ropy bile, of a dark yellow or green colour; the gall ducts sometimes contracted, at others not; the appearance of the pancreas, spleen, and kidneys, was various, frequently differing but little from their natural state, in other cases slightly surcharged with blood; the urinary bladder was always collapsed and empty; the uterus was in general natural.

CHAPTER V.

Treatment of Cholera; when in time, it is not an unmanageable Disease.—Blood-letting.—Sinapisms and Rubefacients.—Dry Frictions.—Blisters.—Dry Heat.—Warm Bath.—Calomel.—Opium.—Internal Stimuli.—Emetics.—Purgatives.—Enemata.—Sub-nitrate of Bismuth.—Muriate of Soda.—Drinks.—Secondary Stage.—A Sketch of the Several Stages of Cholera, with an Account of the Treatment adapted to each of these Stages.

The Cholera has not been found to be less under the control of an appropriate treatment than any other disease equally rapid in its course. When remedies of a proper kind have been administered in the early stage of the complaint, and judiciously managed, a favourable termination has in the majority of cases been the result. The difficulty is to induce patients to apply sufficiently early for medical aid,—with the loss of a very few hours the chances of recovery are greatly diminished. “If the disease,” says Annesley, whose experience in the treatment of the Epidemic Cholera during its prevalence in India, was considerable, “be taken at its commencement, or within an hour after the seizure, it is as manageable as any other acute disease, but the rapidity with which it runs through its course, requires the most active exertions before it can be checked, and the loss of an hour may cause the loss of a life.”*

The remedy, the good effects of which, in the treatment of Cholera, appears to have been most generally acknowledged, and the early employment of which is most insisted upon, is *blood-letting*.

Bleeding from the arm in the first stage, when the pulse is full, and the temperature not reduced, is often sufficient to cut short the disease. The patient always feels immediate relief, particularly where the head has been much affected. The bleeding should be performed in a horizontal position, and the patient remain quiet for some time afterwards. We are directed by Dr. Dyrsen to increase the flow of the blood from the arm by frictions to the surface of the body, with flannel cloths

* Diseases of India, p. 175.

wrung out of hot water, or by bleeding during immersion in the warm bath.

According to Mr. Bell, "in no case in which it has been possible to persevere in blood-letting until the blood flows freely from the veins, and its colour is recovered, and the oppressed chest is relieved, will the patient die from that attack of the disease." He directs, that when the blood has once begun to flow, it be allowed to escape till these changes are observed. The ordinary rule for the use of venesection in acute diseases, namely, to continue till syncope come on, is here inapplicable, as it is extremely difficult to induce fainting in patients affected with Cholera.* It is the opinion of Mr. Kennedy, that, in ninety-nine instances out of a hundred, where patients are said to have died "despite of blood-letting," it will be found, upon examination, either that no blood flowed from the incised veins, or that it came away in drops, or in a small broken stream, rarely exceeding a few ounces in quantity. "On the contrary," he adds, "where blood was freely obtained to the extent of twenty or thirty ounces, and where the depletion was followed by proper auxiliaries, the patients have usually recovered."†

The testimony of the German, Russian, and Polish physicians is equally decisive in favour of the beneficial effects resulting from blood-letting, when early resorted to in Cholera.

The absence of the pulse is no prohibition to the use of the lancet, unless it be accompanied by other symptoms of great debility, and the system has been exhausted by previous evacuations, and the surface is covered with a cold clammy sweat. Even under such circumstances, many attest the advantages of blood-letting, especially when preceded by sinapisms, the application of dry heat and frictions to the surface, and diffusible stimulants internally. In some cases of Cholera, Dr. Lefevre remarks, the pulse ceases to beat very early, but upon opening a vein the blood flows slowly at first, gradually the current becomes fuller and stronger, the pulse beats very sensibly, and the heart thus relieved is enabled to continue the circulation.

The only cases in which bleeding would appear of doubtful propriety, during the first stage, are those occurring in old, debilitated subjects, and in constitutions completely broken down by intemperance.

* Treatise on Cholera, p. 105. et seq.

† History of Cholera, p. 169.

When blood cannot be drawn from the arm, and the spasms continue—when severe pain and burning heat are felt at the epigastrium—when the skin is cold, and deluged with a cold clammy sweat, and when there is oppression at the chest, and difficulty of breathing, excessive pain and confusion of the head, with great intolerance of light, no pulse, or a very indistinct one, and a cadaverous smell from the body, Mr. Annesley advises the immediate application of twenty or thirty leeches to the umbilicus and scrobiculus cordis, in conjunction with frictions with turpentine externally, and the calomel pill internally, while at the same time leeches are to be applied to the temples and base of the skull.

In the advanced stage of the disease an opportunity is sometimes afforded for the abstraction of blood. This, according to Annesley, is marked by a struggle or effort of the circulation to overcome some resisting power, and is a most auspicious symptom, which should never be overlooked: as soon as it occurs, bleeding, directed with great judgment, should be resorted to.*

Dr. Lefevre objects to leeches in Cholera, and, we think, with propriety, from the slowness of their operation; he advises cupping as preferable.

The patient, after bleeding, should be warmly covered with bed clothes, and allowed to remain perfectly still for a short period.

Sinapisms and Rubefacients.—These are among the most efficacious means adapted to the cure of Cholera. “It may be said of them, that they are indispensable, and there is hardly any stage of the disease in which they may not be employed with advantage—so long as the disease endures, so long will their use be indicated, and they should be repeated continually.” The pain in the bowels, and even the sickness, are often instantaneously relieved by the application of a large sinapism over the abdomen, and much pain is saved the patient, if it be applied early.† In violent cases of the disease the application of sinapisms to the ancles, wrists, calves of the legs, inside of the arms and thighs, and along the spine, is recommended in the strongest terms in various treatises on the Cholera, and we feel persuaded, from the beneficial effects which we have seen result from the practice, that it is one which should never be neglect-

* Diseases of India, p. 156. et seq.

† Lefevre, Obs. on the Nat. and Treat. of Cholera, p. 58. et seq.

cd—it would be as well probably to defer, however, the sinapisms until the full effects of dry frictions have been tested. When the skin has been excoriated by the use of sinapisms, anodyne fomentations, or even pulverised opium, sprinkled over the tender surface, will often be useful in relieving pain and nausea.*

Dry Frictions are recommended as remedies of great efficacy in all cases of Cholera—they are best adapted to, and have been found most beneficial in the early period of the attack. “The object of friction is two-fold. 1st. To restore the circulation in the part, and the heat that is dependent upon it. 2d. To introduce remedies into the system by absorption. The first may be effected by mere dry rubbing with the hand, or a warm flannel, or the flesh brush, and, if persisted in, will often restore the circulation to the extremities, which were previously cold and senseless; but it requires great perseverance, and long continuance, for it is necessary to keep up the circulation after it is restored; hence it can only be recommended in those circumstances where there are plenty of attendants to wait upon the sick. Various liniments have been proposed to aid the effects of friction, but they may be superseded by steady rubbing with the hand, which should be sprinkled occasionally with a little powdered starch, or a little camphorated oil, to prevent abrasion. Where proper and effectual rubbing cannot be maintained, stimulating liniments should be employed,—because little rubbing will suffice, and the effect will be more permanent. The liniment composed of camphorated spirit and ammonia will answer every purpose. When the spasms are severe, Mr. Annesley prefers the spirits of turpentine as an embrocation. Embrocations with ardent spirits are evidently improper, as their rapid evaporation will have a tendency to increase the coldness of the surface.

Medicines may be introduced into the circulation by frictions—and thus certain indications fulfilled, when the stomach is in too irritable a condition to retain the appropriate remedies. Especially may local pain and spasm be alleviated by frictions with opium, hyosciamus, and other narcotics, in the form of liniment or unguent.†

Blisters would appear to be less proper than sinapisms, in the first stage of the Cholera, from the slowness of their action.

* Lefevre, Obs. on the Nat. and Treat. of Cholera, p. 58. et seq.

† Lefevre on Cholera, p. 60, et seq.

In the second stage, however, they may be demanded, should local congestions or chronic inflammation occur.

Dry Heat.—This remedy is strongly recommended by many of the practitioners who have witnessed the Cholera in the north of Europe. Mr. Kennedy, also, recommends it in the first stage of the disease, after bleeding, the warm bath, and the other remedies which are immediately demanded. He remarks, “as soon as the cramps are subdued, or have received a decided check, the patient, with all possible expedition, should be removed from the bath, and placed between *dry* heated blankets. Dry warmth should be further afforded by surrounding his body and limbs with bags of heated sand. Here *dry heat*, be it remembered, is the remedy, and not the sand which contains it. On this principle, bottles of hot water rolled in flannel, have been employed, and, also, hot ashes, bran, oat meal, &c. &c. A more efficient mode of applying dry heat, than any of these, may suggest itself; but occasionally, to prevent loss of time, we must take the first that offers.”*

Warm Bath.—In regard to the good effects of this remedy, there is some discrepancy of opinion among the different writers upon the treatment of Cholera. While it appears to have been viewed by many of the East India surgeons, and most of the Russian and German practitioners, as a remedial agent of great power, rousing the dormant activity of the circulation, and determining the blood to the superficies of the body, others have objected to its use entirely. In St. Petersburg, according to Dr. Lefevre, the use of the warm bath was, at the commencement of the epidemic, almost universal; but it soon fell into disuse, and, upon the whole, he believes that its use has been found prejudicial. This, he conceives, arises from the exhaustion produced by transporting the patient from his bed to the bath—and by the effects of the latter, and from the pain and uneasiness which the patient experiences by his “sudden transition from cold to heat.” These objections appear to us, however, to be due rather to the injudicious manner in which the bath has been administered, than to the bath itself. Dr. Lefevre admits that if employed at the commencement of the attack, “when the excitement is still considerable,” it will often be found serviceable, and prove very comfortable. He considers, however, the vapour bath, dry heat, and frictions, to be preferable. Others recommend the substitution of hot fo-

* Kennedy on Cholera, p. 176.

mentations, poultices, &c. The evidence, however, in favour of the use of the warm bath, in the treatment of Cholera, is of too strong a character to allow of its being slightly rejected. On this subject there is much good sense in the following remarks of Mr. Kennedy:—"In the treatment of Cholera, several physicians limit their encomiums to the warm bath; others extol the vapour bath to the exclusion of the former; while latterly, a third authority* maintains that a hemp seed poultice is better than either. A grain of reflection might have convinced the three parties that they were divided on the merits of a name alone. The medical virtue is the same in all, and it consists simply in the application of heat and moisture to the surface of the body. The question to be determined is the effect which these remedies are, individually, capable of producing, in a given time, upon the patient, and where there is a choice at command, we should select the strongest one of the number. Now, the warm bath is by far the most effective and convenient agent of the class to which it belongs; it communicates heat more rapidly to the body than either the vapour bath or the poultice, and the relaxing power of its moisture is commensurate. It should, therefore," he adds, "be preferred in those stages of the disease where the use of moist heat is indicated—from its superior power, a greater degree of caution, it should be recollected, is required to prevent its being too long continued or misapplied." Mr. Kennedy considers the proper period for the use of the warm bath to be the early stage of the disease.†

The following are the directions of Dr. Hamett, one of the British Medical Commission at Dantzic, for the use of the warm bath.

"It has been found necessary to guard against the indiscriminate use of the hot water and vapour baths, in hot weather, after perspiration has broken out, and above all, in the clammy stage of the disease, and after marked venous congestion has taken place, when it seems to increase the latter, which is particularly observable in the brain and heart. The bath should be used either in the critical moment at the beginning of the disease, or, at farthest, instantly after, if admissible even then. To obviate the determination of blood to the head, cold applications ought to be occasionally applied to it, while the patient

* Warsaw Committee of Health.

† Kennedy on Cholera, p. 166.

is in the bath. The patient should be most gently, and otherwise judiciously placed in the bath, with respect to the gradually inclined position of his body, and the due support of the head, neck, and shoulders; and the immersion or subjection should be short; merely long enough for the positive communication of heat and its effects; when he ought to be as gently and judiciously taken out, well wrapped up in hot blankets, promptly laid in a bed, and gently rubbed with warm, dry, coarse, but soft thread towels, all over; and wiped dry as fast as the clammy sweat oozes out. There is much handy and careful personal management requisite, in this essential part of the treatment.”*

Calomel.—The exhibition of calomel in Cholera is a practice which has been pursued by a majority of the English surgeons in India, and it is spoken highly of by such of them as have witnessed the disease in the North of Europe. In many instances the use of calomel has been carried to an enormous extent—doses of a scruple to half a drachm being considered the smallest which are adapted to the disease; others, however, have condemned the use of the remedy, to this extent, and recommend it to be given in smaller doses, frequently repeated, and in general combined with opium. The evidence which is advanced in favour of the beneficial effects of calomel under both modes of administration might at first view appear perfectly conclusive; but in making up our mind on this subject, we are to recollect that in almost all the cases which are adduced where the practice is supposed to have been eminently successful, other important remedies have at the same time been employed—especially bleeding—frictions and stimulating applications to the surface, and very commonly the warm bath also. Upon the early and judicious employment of the last mentioned remedies, nearly all the writers agree that the cure of the disease mainly depends; by many they are supposed to be of themselves fully sufficient, and that the various internal remedies that have been resorted to are either useless or absolutely pernicious. Among the physicians of Russia, Poland, and Germany, there are but few who recommend the use of calomel at all, and the majority denounce, in very decided terms, its employment in the early stages of Cholera, or to the extent to which it was carried by the practitioners of India. In Warsaw, the result of experience showed, according to Dr.

* Reports to the British Government, by John Hamett, M. D.

Hille, that whether in large doses, or in small ones, frequently repeated, the calomel did more harm than good, and hence its use was either entirely abandoned, or it was given in a single dose of a few grains combined with opium.* Dr. Gibbs, writing from St. Petersburg says, expressly, that scruple and half scruple doses of calomel would not do there.† And Dr. Lefevre very properly remarks, that small doses combined with opium can be of no use in the first stages. “In slight cases,” he adds, “where the quantity of opium is sufficient to allay the spasmodic action, whilst time is allowed for the calomel to act gradually, the combination, however, may be of service; but it must share the same fate as all the vaunted nostrums which, when administered indiscriminately, lose even the merit to which they are really entitled.‡ In Dünaburg, no calomel was administered, and of 745 cases, many of which were in the last stages of the disease when first seen by the physician, only 75 terminated fatally.§

Opium.—No remedy has been proposed in the treatment of Cholera, which has so great a mass of testimony in its favour as opium. Nearly all physicians, whatever may be their opinions as to the nature of the disease, employ it in some shape, at one period or other of the disease. By some it is recommended in the largest possible doses, by others, however, when given in smaller doses, it is considered much more efficacious, and less liable to produce injurious consequences. Mr. Orton considers it “probable that a single dose of opium alone, given at the very commencement of the disease, would be found, in a great majority of instances, to put an effectual check to its progress.” He warns us, however, against an excessive use of the remedy. When given in large doses, its secondary, perhaps its immediate effects, he thinks are an increase of that oppression of the vital powers, which so strongly marks the intense degrees of the disease. He prefers giving it in substance to the tincture, as less liable to be rejected. Four grains he recommends for the first dose, to be repeated, if a favourable change is not produced, in diminished doses, at intervals, of from three to six hours.|| The Polish and a few of the Ger-

* Ueber die Assiatische Cholera, p. 115.

† Observations of Cholera, Ed. M. & S. Jour. p. 396. vol. 36.

‡ Observations, &c. on Cholera, p. 72. et seq.

§ Ueber die Cholera in Dünaburg von Dr. Ewertz, Jour. f. Chirur. u. Augenheilhunde, p. 313. vol. 17.

|| Essay on the Epidemic Cholera, p. 304. et seq.

man physicians object, however, to the exhibition of opium in Cholera. The brain and spinal marrow tend so rapidly to assume in this disease a congestive condition, remarks Dr. Hille, that opium, even in small doses, from its tendency to accelerate and augment this morbid state of those organs, becomes a very doubtful remedy. This was likewise the opinion of most of the physicians at Warsaw* and at Riga.†

Internal Stimulants.—The exhibition of ether, brandy, ammonia, and other stimulants, we find to be very generally recommended, especially in the advanced stage of the disease. They are directed to be continued until reaction is fairly established, after which they are to be gradually relinquished. In the early stage of the disease we have less evidence of their good effects than during that period in which the clammy sweat, icy coldness of the surface, scarcely perceptible pulse, and sunken countenance, indicate a state of collapse, which, if not speedily removed, the loss of the patient is inevitable. Many would appear to have employed the most powerful stimulants even from the very commencement of the attack, and with no sparing hand. This practice cannot, however, be too severely reprobated.—Stimulants require at all times much judgment and great caution in their employment, or they will most assuredly produce far more harm than good. Mr. Bell very properly warns his readers against the practice so generally adopted in India of prescribing inordinate doses not only of internal stimulants, but likewise of calomel and opium. He maintains that some individuals, in whom the disease appeared to be checked by them at first, nevertheless eventually died from their poisonous operation.‡

Emetics.—By several physicians emetics are directed in the early stage of Cholera “to remove crudities from the stomach.” According to Dr. Lefevre, they were found productive of very little benefit. Their efficacy, as we shall hereafter show, must greatly depend upon the stage of the disease, and the constitution and prior habits of the patient.

Purgatives.—Though considered by some as indispensable remedies in the treatment of Cholera, they do not appear, with the exception of calomel, to have been very generally employed until after the more pressing and violent symptoms of the disease have been subdued. At this particular juncture it is very

* Beobachtungen über die Cholera, p. 116.

† Nachrichten Rigaer aertze über die herrschende Cholera Epidemie. p. 330.

‡ Treatise on Epidemic Cholera.

generally conceded that they have been productive of the best effects. "They are indicated so long as the bowels do not perform their functions regularly, and the motions have an unusual appearance; nor is there any fear of reproducing the disease by their continuance, so long as we take these marks for our guide. It is much more likely to recur from neglecting to administer them; and the quantity of unhealthy matter which is often evacuated for a long time after the disease has been subdued, warrants the assertion." Such is the experience of Dr. Lefevre in regard to the use of purgatives.—Mr. Orton pronounces them indispensable after the favourable crisis for preventing or removing the train of fatal sequelæ which so frequently attend the disease. They are found to produce copious discharges of vitiated bile and fæces. By Mr. Annesley nearly the same statement is made. Until the dejections became, under the use of purgatives, of a blackish grey colour, substantial and tenacious, the latter gentleman never considered that he had made much advancement in the cure of his patients.

"A full dose of calomel," remarks Dr. Lefevre, "is often useful in the beginning of the convalescence, as it acts upon all the secretions—but the simple purging, which is so requisite after this disorder, is best effected by small and repeated doses of castor oil." The virtues of the latter have indeed been extolled in a very positive manner, by the physicians both of India and Europe. "The success under its use was very considerable, and there seems," says Mr. Scott,* "to be sufficient evidence to warrant a more extensive trial." It is admitted on all hands, that purgatives which produce frequent, watery dejections, with griping and tenesmus, are in the highest degree prejudicial.

Enemata.—When the irritability of the stomach, or incessant vomiting, prevents the exhibition of remedies by the mouth, enemata appear in some cases to have been useful. From the great irritability of the intestines, their speedy rejection prevents, in the majority of instances, any great advantage from being experienced from their use in the commencement of the attack. In the latter stages of the disease, however, they are of signal service, especially in such cases as have been attended with much spasm, and the bowels continue sore for a long time after, and every motion is productive of pain. Here an enema composed of half a pint of flaxseed tea and ten drops of laudanum produces immediate relief—administered in this manner,

* Madras Report.

the opium is less liable to produce injurious consequences than when given by the mouth.* Injections per anum of hot water, above blood heat, have been highly spoken of in cases of great collapse and general coldness of the surfaces. After remaining in a while, the water may be withdrawn by the syringe and a fresh supply introduced. Tobacco enemata have, also, as we shall soon see, been recommended and used. Mr. Fife speaks favourably of injections of mustard—they have, he says, promptly brought on a discharge of urine, after it had been entirely suppressed.

Sub-nitrate of Bismuth.—To read the statements given by some of the Polish and a few of the German physicians, of the beneficial effects of sub-nitrate of bismuth in every case and stage of Cholera, we should conclude certainly that a specific for the malady had at length been happily discovered. More extended experience has shown, however, that the character which the bismuth at first obtained as an infallible remedy for Cholera was unmerited, and by many it was pronounced to be incapable of producing any good effects, and if indiscreetly administered, was mischievous. Mr. Lefevre, who has evinced not a little judgment in his estimate of the value of the various remedies proposed in the treatment of the disease, believes that much good is to be derived from the prudent use of this article. No remedy seems to quiet the cramps and vomiting more effectually, and when employed in moderation, it does not produce those unpleasant effects upon the system which follow the use of severer remedies. The doses administered by Dr. Leo, by whom the article has been principally recommended, were from two to four grains every two to four hours. Dr. Lefevre warns us to discontinue its use as soon as the vomiting and spasms have ceased. If this does not take place after six or eight doses, it is useless to continue it longer. It is proper to remark, that according to the testimony of Dr. Baum, great inflammation was detected in the bowels of those who died after the use of the bismuth.†

Muriate of Soda.—Although a solution of common salt is praised by a few of the continental physicians as a powerful remedy in Cholera, and is recommended by Mr. Searle as an emetic in the commencement of the case, we cannot say that the evidence in its favour is very strong. It is true we are told by Dr. Barry, that at St. Petersburg, two German physicians de-

* See Lefevre's Observations, &c. on Cholera Morbus, p. 63, et. seq.

† Dr. Hamett's Reports to the British Government from Dantzic.

clared in his presence at the medical council, "that during the preceding eleven days, they had treated at the custom-house hospital thirty Cholera patients, of whom they lost none. They gave two table-spoonfuls of common salt in six ounces of hot water at once, and one spoonful of the same, cold, every hour subsequently."* But let it be recollected, that these gentlemen, as well as the others who have recommended this remedy, always premised bleeding and other remedies, upon the importance and good effects of which in Cholera there is but little discrepancy of opinion. It is thus that many remedies in this and other diseases, acquire a fictitious reputation, from being conjoined with others of acknowledged power—when had they been omitted, the case would, in all probability, have proceeded as rapidly, or perhaps even more so, to a favourable termination.

We might extend this chapter to a much greater length, by a notice of various other remedies which have been proposed and strongly recommended in the treatment of Cholera by different writers, but the means not being afforded us by which any decided opinion as to their efficacy can be formed, we conceive it more prudent to confine our remarks to those most generally employed, and in regard to the effects of which we are furnished with the results of a pretty extensive experience. We have merely in addition to the remarks already made, to say a few words upon the drinks proper to be allowed in this disease, and the general treatment demanded in its secondary stage.

Drinks.—A strange diversity of opinion exists among the writers upon Cholera, as to the proper drinks to be allowed the patient. By some, diluents of every kind were entirely prohibited, in consequence of a supposition that they increased the vomiting. The great desire of the patient is for cold water—he appears to labour under the most distressing thirst, the calls of which, it must be evident, cannot be disregarded, without materially increasing his sufferings, and eventually, the disease under which he suffers. Mr. Scott, in common with nearly all the best practitioners, concedes the propriety of allowing some bland diluent, but maintains that it should be given of tepid warmth—he conceives that *cold* drinks are always dangerous, and generally fatal.† This was the opinion very generally of the surgeons in India. Mr. Annesley, however, gave cold

* Communication from St. Petersburg, July 20, 1831.
Madras Report.

water with a slight impregnation of nitric acid. This was the general drink at the hospital under his care, and was found to relieve the most distressing symptom of the disease, the burning sensation at the stomach.* From the experience of the European physicians, it would appear very fully settled, that cold drinks are not more prejudicial than warm, and when desired by the patient, should be freely given. According to Lefevre, iced lemonade has often been taken with advantage,† and even the lower orders of the Russian people drank their *quass* as usual, and with seeming benefit. The diluted nitric acid, he states, may be added with great benefit to the common drink. Fifty drops of the diluted acid, added to a pint of water, sweetened to the taste, is a grateful beverage.‡ Mr. Orton allowed usually only moderate quantities of a weak infusion of ginger, with the addition of a little sugar and milk.§ Dr. Dyrsen, of Riga, says, that when the thirst is great, warm or even hot drinks are the best, and are often retained and even desired by the patient. He directs infusions of the various mild aromatic herbs, or when these are unpleasant to the patient, of common black tea. But when the patient desires earnestly cold drinks, they may be given in small portions at a time, without fear of any bad consequences. Fresh milk, moderately cool, he states, has been found very beneficial, and when the diarrhœa is considerable, a decoction of rice or pearl barley, thin tapioca, and the like, to which, when there is entire absence of pain or tenderness of the abdomen, a little red (Port) wine may be added. A cup of strong coffee he has found very readily to suspend the vomiting in this disease—he advises the patient, in case of the drinks being rejected by the stomach, to be allowed to swallow small portions of ice somewhat rounded into the shape of a pill by being rolled between the fingers||—a practice also recommended by Broussais.

The strongest testimony in favour of warm water, is that given by Dr. Sturm, a surgeon in the Polish army: writing from the encampment near Kamienska, he says, “The treatment which we now pursue is probably already known to you, as Dr. Helbig has been ordered to publish an account of it in the newspa-

* Annesley on the Diseases of India, p. 174.

† By Mr. Bell also, and some few of the practitioners of India, cold lemonade was allowed. Bell on Cholera, p. 108. See also Searle's second publication on Cholera.

‡ Lefevre on Cholera, p. 82 et seq.

§ Orton on Cholera, p. 309.

|| Kurzgefaste anweisung die Orientalische Cholera, p. 37.

pers. It consists in nothing else than giving to the patient as much warm, nearly hot, water, as he is able to drink, in the quantity of a glassful every fifteen or thirty minutes. By the time he has taken fourteen glasses the cure is complete, with the exception of a slight diarrhœa, which it is not proper suddenly to suspend. The effects of this plan of treatment are so quick and effectual, that in two hours, or often sooner, the patient is well, particularly when it is commenced with sufficiently early.”*

Treatment of the Secondary Stage of Cholera.—After the more violent symptoms of the disease have been removed, that is, after the vomiting and purging have been suspended, the regular action of the heart established, and the circulation and heat of the surface permanently restored, the attention of the physician must be directed to guard against or remedy local congestions, to prevent inordinate reaction, and to produce a healthy action of the bowels. Congestion is most liable to take place after the first stage or that of collapse is over, in the liver and lungs, and sometimes in the head also. For this, moderate blood-letting, local or general, according to circumstances, is the most certain remedy. When febrile symptoms with determination to the brain present themselves, topical bleeding will be found very successfully to relieve it. The judicious employment of blisters, and of cold applications to the head, will also be of advantage. When the healthy condition of the bowels has not been produced by the remedies administered in the first stage, moderate doses of calomel, followed by castor oil or other mild purgatives, will be demanded. As soon as the discharges have become feculent, the patient may be considered out of danger, and the purgatives discontinued, but not until then. Tenderness or fixed pain in the region of the stomach or any part of the abdomen, call for the application of leeches.†

The great debility which necessarily continues for a short time after the symptoms of the first period of the disease have been removed, would appear to many to demand stimulants, powerful tonics, and a nourishing diet; but these are dangerous remedies. Simple debility is seldom dangerous in this or in any other malady: it is best removed by a light, unirritating, and very simple diet, in connexion with properly regulated exercise. Change of air has been found to exert a remarkably be-

* Beobachtungen uber die Assiatische Cholera, von Dr. Hille, page 92.

† Bell on Cholera.—Annesley on the Diseases of India.

neficial effect during convalescency from Cholera, provided it can be obtained without much fatigue or exposure.*

We need hardly say that much depends upon the careful attention of the patient during some time after recovery, to avoid all the exciting causes of the disease, and thus prevent a second and perhaps fatal attack of the disease. Strict cleanliness, temperance in the widest signification of the term, appropriate clothing, equanimity of mind, regular exercise and repose, are the sole means to ensure a perfect restoration of health and its continued enjoyment.

Having reviewed, in succession, the various therapeutical agents which have been had recourse to for the cure of Cholera, and stated the indications which they have been intended to fulfil, we shall now exhibit an analysis of the symptoms of the disease, with reference to the treatment. We propose, in fact, to place before our readers the several circumstances under which the practitioner will be required to act with promptitude and effect.

Whether we compare the epidemic with our own endemic cholera, in reference to the progress and phenomena of the two diseases, or compare each of the several stages of this epidemic with some one stage of other familiar diseases, we, in these United States, need not look on it with wonderment, as peculiarly new or anomalous. We have already had occasion, in the chapter in which the symptoms were described, to show that the difference between the epidemic and the endemic, or even sporadic Cholera, is rather in degree than in kind. If the group of symptoms in the latter be thought sufficient to indicate a rational treatment, we cannot well refuse to the collection of symptoms in the former, a similar indication. Nothing short of rank empiricism should make us rely in either disease on any one remedy, to the exclusion of others, nor on the same routine or succession of remedies without regard to the stage of the disease, or the age, constitution, and prior habits of the patient. But we are told that the want of success in the treatment of the Epidemic Cholera, or Cholera Asphyxia, is discouraging, and that the differences of practice among medical men are sufficient to induce scepticism of the value of any attempt at cure. It is indeed deeply distressing to see sudden and numerous deaths from Cholera; but to be able, by human power, to prevent a great number of these, considering the

* Orton on Cholera.

class of people attacked, their situation, and habits, and their neglect of first symptoms, would imply, not so much a deficiency of skill and weak resources of art, as the possession of nearly miraculous power. As relates to the second objection, need we be surprised that the practice in the disease of India should be different from that in Russia, or that the course found useful in the cases of the European soldier and civil servants of the East India Company, should not be applicable to the miserable, filthy, drunken serfs of Russia, or scum of the people in the cities and towns of Great Britain and Ireland.

In comparing the therapeutical agents which have been recommended and used for the cure of Epidemic Cholera, with those which we either have recourse to or would promptly put in requisition in our own endemic form of the disease, we can discover no addition to our store—no discovery of any moment. We say nothing now of the many pretended specifics which have had their short-lived reputation in Epidemic Cholera, such as camphor, cajeput oil, flowers of bismuth, &c. or the nostrums vended with fraudulent intent by avaricious empirics.

But while thus left free to adopt for ourselves a course of treatment for this disease, it does not follow that we should do so at random. The American physician has good data for a *ratio medendi* of Epidemic Cholera, obtained from his knowledge of the endemic disease. He has also annually before his eyes a representative of the malady in question, in the Cholera Infantum, or endemic of our cities, between which and the Cholera Asphyxia, there is not only resemblance, but often strict identity. In both, there is for the most part a precursory stage, marked by diarrhœa and other symptoms of intestinal irritation—in both, we have discharges of the same kind and variety, in the second stage, together with symptoms of collapse of the capillaries of the skin, which is cold and sodden, and also shrunken and altered features. In both, the first and violent stage of Cholera will often be followed by fever, and various degrees of complication, in phlegmasiæ of other organs. Commonly, indeed, the second, or strictly Choleric stage, runs its course with more rapidity in the Epidemic Cholera than in the endemic variety attacking children; and yet we have seen instances of nearly as rapid a course, and violent a termination, of the latter as of the former malady. The Cholera fever is in general, more distinctly marked and of longer duration in Cholera Infantum than in Cholera Asphyxia, but even here there are no distinctly

contrasted features by which to show any specific difference between the two diseases. Strong as are the evidences of gastro-intestinal irritation, and clearly referrible as are the symptoms of Cholera Infantum to this source, dissections have not, any more than in the epidemic variety, with any uniformity, added to the force of our convictions on this head. So that, even in the uncertainties of their pathology, there is a resemblance between the two diseases.

Akin to Cholera, if we have regard more especially to gastric distress, and violent spasm of the muscles of the abdomen and limbs, is Bilious Colic, a common disease in the middle and southern states. The chief causes of this malady are the same as those of Cholera, viz. irritating ingesta, and suppression of the cutaneous functions, by the sudden application of cold to a body overheated, and enfeebled by much exercise in, and exposure to the sun. It is also often the foundation, or first stage of bilious fever. To the parallel between the cold, or, on occasions, comatose stage of intermittent fever, and the collapse and asphyxia of Cholera, we have already adverted. The same order of parts is affected in both, viz. the abdominal viscera, the lungs, the heart, and the brain, by congestion. In both, death has taken place in this stage; in both, reaction may come on to the present relief of the patient; but with the effect of bringing on new and different symptoms, requiring for their removal remedies of a different nature from those administered in the first stage.

On recapitulation, we find, that our common disease, the Endemic Cholera, both of adults and children, acknowledges community of causes, and of pathological phenomena, with Epidemic Cholera, and that between the latter and bilious colic, and the cold stage of intermittent fever, there is a close resemblance. All these familiar endemics, in various sections of our country, have their seat and sustaining cause in the same organs, viz.—primarily, in the gastro-intestinal canal—secondarily and sympathetically, in the liver, spleen, and often brain, which are engorged. Impressions on the skin have, it is true, a very important bearing on these diseases—since, but for the continued debility and deterioration of function of this surface, kept up by residence in a damp and unwholesome air, and want of suitable clothing and cleanliness, the digestive canal would not have acquired that susceptibility by which ingesta become irritating, and act as exciting causes of the diseases referred to. Still it is not the less true, that the gastro-intestinal surface is

the prime seat of irritation—whence this morbid state is radiated to other parts of the body.

Attempts have been made to show, that Cholera Asphyxia, or Epidemic Cholera, has its chief seat in the ganglia of the great sympathetic, and the spinal nerves. Dissections barely give a colour to such a supposition, which, moreover, is not borne out by the phenomena of the disease. That the centre of the nervous system of nutritive life, should suffer in a disease in which are involved all the organs supplied by this system, is natural enough. But this is rather one of the effects, than a cause of the disease—just as turgescence of the brain, and delirium, are effects often of gastro-hepatic inflammation. The convulsive movements of the muscles of the abdomen and extremities, lead us to presume, of course, an active state of the spinal nerves, but by no means an inflammatory lesion of them, or of the spinal cord itself. There is reception of a strong irritation from sentient surfaces by this cord, and its subsequent transmission to the muscles; but this series of actions does not imply inflammation such as might be suspected where there was fixed tetanic spasm.

Treatment of the first or forming stage of Cholera.—If we examine, in succession, the several stages of Epidemic Cholera, we believe that the symptoms will be found sufficiently indicative of the order of parts affected, and will, in a measure, guide us to a rational treatment. In the first or forming stage, we meet with diarrhœa. Atony of the skin, and the use of unsuitable ingestæ, are causes adequate always to the production of this disorder—the greater the atony of the skin, the more readily will diarrhœa be induced by the slightest deviation from the customary regimen. Sudden and powerful depressing causes, such as cold and moisture, or mental anxiety and fear, will induce this state of things, even without any change of diet. The colon is the part of the intestinal canal, on the irritation of which we know the symptoms of diarrhœa more particularly to depend. The practical question then arises—how are we to manage this forming stage? how contrive that it shall not be followed by the invasion of Cholera in all its horrors and danger? Certainly not by specific remedies, or an uniform treatment. Regard must be had to the constitution of the individual complaining, and to the extent of pain or tenderness of the abdomen, and sympathetic vascular irritation. At this time, says Dr. Kirk, “the skilful practitioner will give pills composed of aloes and calomel, or a pill composed of scammony, calomel, and aloes. The bowels, then, in general, act

briskly. Continue the course for three days—keep the patient warm in bed—give him mild and gentle nourishment—and after an immense quantity of horribly offensive dejections, the patient is completely recovered, and snatched from the jaws of the dreadful fate which awaited him. Some practitioners prescribe the mustard emetic in this state, small doses of calomel and ginger, and bleeding freely; but I prefer decidedly and on experience, the purgative system.” In the cases of individuals whose bowels are habitually torpid—who have indulged in the use of irritating ingestæ—or in whom there is an absence of much heat or pain of the abdomen, the purgative plan will, doubtless, answer well. But as our object here is to allay intestinal irritation, we have but to recur to former and long tested experience, which shows that one of the very best means for this purpose, especially where diarrhœa is present, is to keep quiet in a recumbent posture, restore the warmth of the skin by additional clothing, friction, and the warm bath, and to take warm drinks, either simple diluents, or those of a stimulating nature, according to the condition of the stomach, and the prior habits of the patient. It was often sufficient, in this forming or diarrhœal stage, for the person to go to bed, get himself warm, and take a draught of hot herb tea. Perhaps a dose of castor oil, or of magnesia, may be premised. The great object in this stage, is to restore the lost balance of function—to bring back the skin to its natural action, and in so doing, to restore the bowels to their healthy secretions.* Failing or neglecting to do this, the remote cause of disease still acting, and acquiring additional power by the irritation caused by exciting ones, the patient is thrown into the second or distinctly marked choleric stage of the disease.

* In a case, the symptoms of which were evidently of choleric diarrhœa, and which came under the care of Dr. Bell, in the month of May last, he had the patient bled, prescribed calomel and rhubarb pills, and afterwards a grain of opium, with some magnesia.—The patient was soon restored to health. In directing venesection, Dr. B. was not so much induced by the choleric form of the disease, as by his knowledge and former attendance on this person, of his proneness to enteritis. We have said that the symptoms were evidently of choleric diarrhœa. The patient went to bed, feeling as well as usual—he was awake in the night with urgent desire to go to stool, which was often renewed, and barely allowed of his getting out of bed for the purpose—the discharges were profuse, resembling, as he expressed it, gruel, and at another time he compared them to rice water. They were very exhausting, and accompanied with some nausea and heat of the stomach. The tongue was white and loaded—pulse small, and rather frequent. He complained also of severe cramps in his legs.

Treatment of the second stage, or that of distinctly marked Cholera.—The transition, says Dr. Craigie, from the diarrhœal stage to that of collapse, though rapid, is never made *per saltum*, as it were, but in all cases, in however short a time, by gradual and successive changes. In most of the cases in which I had an opportunity of remarking this transition, the countenance became first slightly blanched, and the skin began to assume a colliquative humidity. When the pulse was felt at this period, it was not gone; but greatly weakened in force, and small in its size. The patient, at the same time, complained of a sense of sinking at the breast, with an uncomfortable sense of thrilling heat and unsteadiness, as if unable to support himself; and though there were instances in which the patient fell down at this period, from weakness, yet afterwards, when the stage of collapse was thoroughly established, this extreme enfeeblement of the voluntary muscles was not recognized.

Bearing in mind the remark of Dr. Craigie, that by far the most powerful, both as predisposing and exciting causes, are to be found in the diet of the persons attacked; and remembering the habits of those who are the most ready victims to the disease, as well as its great frequency and mortality in countries, the rural population of which has been compelled to use damaged or imperfectly matured grain, or vegetable productions of an indigestible nature, we cannot doubt of the gastroduodenal seat of Cholera. The first symptom—an uneasy constriction or cramp deeply seated in the epigastric region, speedily followed by profuse vomiting and purging of watery fluids, would seem to show the duodenum to be the part more immediately affected. Farther corroboration of this view is furnished in the effects of poisonous substances and putrescent animal matter taken into the stomach. After a time, their ingestion is followed not only by vomiting, but by great prostration of strength, cold and clammy sweats, shrunken features, small and frequent pulse, and often violent spasms of the voluntary muscles. The treatment under the circumstances just mentioned, which is generally deemed most serviceable, is to encourage the expulsion of the offending matters by a mild emetic, and free dilution, by draughts of warm water, or some other bland fluid. A similar practice has been adopted in Cholera, and, in many cases, on good grounds, especially when the attack is recent, and the discharges are either mixed with the food, or are white and inodorous. Inflammation cannot be presumed to exist at this time. The stomach had, up to the date of the at-

tack, exhibited often its customary craving for food, and was not oppressed by its reception—the tongue and skin, and absence of thirst, did not betoken gastritis or gastro-enteritis; and hence we are left free to substitute one irritant, or medicinal and controllable one, for another of a more poisonous kind, which is acting on the mucous expansion of the small intestine, especially of the duodenum.

Some practitioners prefer ipecacuanha, others sulphate of zinc, and some again, mustard, in order to produce full vomiting in Cholera. Mr. Hall, in his account of “Epidemic English Cholera,” prevailing on the river Medway, tells us, that “having practically discovered the efficacy of exciting full vomiting by emetics of ipecacuanha, he employed this in future, in every case, without exception. Several of the cases were infants at the breast; some were pregnant women, and one was a female above eighty years of age. In every case an ash-coloured, slimy, consistent fluid, of a peculiar smell, as well as sourish taste, was discharged by full and efficacious vomiting.”

“If,” says Mr. Greenhow, (on Cholera) “the stage of collapse have not yet established itself, and if, with bilious diarrhœa, the patient complains much of nausea and occasional retching, the matter rejected consisting principally of undigested food, we shall probably find a dose of ipecacuanha, with or without antimony, answer the purpose, or even copious draughts of warm water will suffice to wash out thoroughly the contents of the stomach.”

At this time, should the patient be of sanguineous habit, or complain of pain in the abdomen, head-ache, or vertigo, with accelerated pulse, we may have recourse advantageously to venesection.

A favourite, and, as it would seem, successful practice, in Russia and Poland, was to give a solution of common salt, so as to procure vomiting. After this, bleeding was often had recourse to, and with marked advantage.

After the operation of these remedies, calomel, or calomel with opium, has been given with a view to restore the biliary and natural intestinal secretions. For such an object, calomel alone is best adapted, followed by castor oil, or rhubarb and magnesia.

In cases in which the stage of collapse is impending, or has actually supervened, with violent spasms and excessive coldness of the surface, our remedial course must be prompt and energetic. Guided by what we know to be good and success-

ful practice in bilious colic, in which there is great pain of the abdomen, and cramp of the voluntary muscles, viz.—to bleed freely, give large doses of laudanum, and immersion in the warm bath, we should have some confidence in a similar course in the critical stage of collapse of Cholera. Here, however, we are required to be still more prodigal than in the former disease, of every variety of external stimulus—frictions with warm cloths, or with mustard flour and spirits of turpentine, dry heat by the introduction of hot air under the bed-clothes, by the application of heated bricks or irons, bags of hot sand, salt, or oats, flannels, &c.—sinapisms to the epigastrium—along the spine, and to the inside of the calves of the legs, and on the inside of the arms. The warm, or, rather, the hot bath, for to be of service, it ought to be upwards of 100° F.—is a remedy of undoubted power, and if found serviceable in India and Europe, cannot be without value among us. The warm bath has doubtless disappointed many practitioners, owing to their not using it of a sufficiently elevated temperature, nor insisting on a long enough immersion of the patient in it. “I know a gentleman,” says Mr. Greenhow, “who suffered from Cholera in Archangel, during the last summer, and who was restored from a state of complete asphyxia by being kept in a warm bath of high temperature, for an hour and a half.” In reply to the objections made against the remedy, from the circumstance of the danger of the patient’s using any voluntary exertion, and of the necessity of his strictly preserving the horizontal position during arrested circulation, this author very properly remarks,—“The patient might merely be placed in, and removed from it, with such quickness and so little disturbance, as to obviate the objections that have been made to it.”

Experience teaches that few means are better calculated to rouse the sensibility and excite the action of the cutaneous capillaries, than the vapour bath. Accordingly, it has been used largely in different parts of Europe in the asphyxia, or collapsed stage of Cholera; and, as we learn from Dr. Ucelli, of the Crimea, and others, with marked benefit. Some have objected to the application of moist vapour to the skin, already sodden and wet with cold sweat—and allege that it is of the utmost importance to keep the skin dry, by constant rubbing with dry and warm cloths.—The objection is hypothetical, and based upon erroneous data.—A leading object is to rouse the capillaries of the skin to action; and heat combined with water in the form of vapour, will be found one of the most efficacious means of accomplishing this end. It has also been said that

the use of the vapour bath is apt to cause undue fulness and turgescence of the vessels of the head, and determination to the brain. This effect may be obviated, however, and is at the moment comparatively of minor importance to the collapse and asphyxia from which it is so desirable to rouse the patient. When we recommend the vapour bath, we of course mean our remarks to apply to that variety in which the head is external to the bath, and the patient does not breathe the vapour.

Dr. Kirk has applied the actual cautery in the stage of collapse in three different cases—they were all fatal ones.—The cautery he uses is a tube of porcelain, of a foot long, and an inch and a half diameter. It is inclosed in a copper tube, to which it is luted at the upper and under ends. A rod of an inch and a quarter diameter is made, of the length of this tube, and one half inch longer exactly. The rod has a little wooden handle at top. It is made red hot, and introduced into the tube in another room, and delivered to the Surgeon in that state, who, by pushing it down its extreme length, and applying it to the skin, can apply the actual cautery, without the patient knowing that a red hot iron has been used.

The best place to apply the cautery seems to be the lower part of the back of the head where it joins the spine, and along the spine itself. Dr. Barry says that Dr Lange, at Cronstadt, by the cautery, cured 12 cases out of 14. This is rather too strong a claim upon our belief.

“The next effectual and most efficacious mode of applying a violent irritant; is by placing on the skin a cloth newly wrung out of boiling water. This mode I am in the habit,” says Dr. Kirk, “of regularly practising, and often with benefit. The blister is raised instantaneously, and in the pains of the hypogastric regions, so common in this disease, it in general gives relief in a few minutes. The next speediest mode is the infusion of cantharides in strongest acetic acid, which will raise an effectual blister on the scalp, or other part of the skin, in a few minutes.”

Among the internal means of rousing the patient in the stage of collapse, and bringing on reaction, are the administration of a mustard emetic, followed by laudanum and ether, each twenty-five drops, in an ounce and a half of strong peppermint water—or pills of opium in grain doses—warm brandy and water, or hot water itself. Of the great efficacy of this last simple remedy, in kindred states of the animal economy, we can speak with great confidence. We are surprised not to have seen

mention made of the camphorated draught with nitrous acid and opium, as recommended so strongly by Mr. Hope, and since largely used by other practitioners in dysentery. It is a remedy entitled to confidence and early use, after the exhibition of an emetic, or action on the bowels by calomel.

In reference to the free use of brandy and such like diffusible stimuli, we cannot do better than give the opinions of Dr. Kirk, to which we entirely subscribe:—

“Is brandy, then, a remedy in any stage of this disease? In the report, I have permitted its use in small quantities, not venturing to make an innovation on the established practice by avoiding it altogether; but it is now my duty to say decidedly, that the cup of brandy you perpetually see at the head of the Cholera patient, cannot be given to him innocuously. His bowels are in general in a state of positive high action and inflammation: so are his brain and spinal marrow, and so are even the vascular systems of the greater nerves. What do we gain by brandy? We obtain a temporary diffused excitement from its stimulant powers, and a kind of soothing of the sensations from its narcotic influence; and can these effects produce any change in that morbid condition of the system, which, we have seen, is the cause of Cholera? I will be told that brandy, by the mouth and by enemata, have often and evidently done good.—Let, then, this be its restricted use. Never give it, either in the one mode or the other, but in those extreme cases of disease where even the temporary fillip to nature, which it can give, may be courted; and though it is to come into contact with and irritate diseased tissues, still perhaps, in these extreme circumstances, its use may be indicated. But in the premonitory stages, while action, sometimes high action, still exists,—and when we know many vital parts are highly irritated, and that our business is to subdue that action,—I never see the glass of brandy at the patient’s head without a shudder. It is a fact that intelligent practitioners are every day becoming more and more cautious of the use of this stimulant. I feel that I have ventured far in this wholesale condemnation of it; but I confidently anticipate the decision, in my favour, of those who are to come after me, inasmuch as my views are certainly founded in the ascertained pathology of the disease. When I think a cordial strongly indicated, I am in the habit of preferring the pure wines, the irritation to the inflamed tissues, from their use, being less to be dreaded than the sharp and naked points of alcohol.”

Enemata of various compositions have been much used in

the different stages of Cholera.—In the stage of collapse, large injections of warm water have been much used in the north of England, and with a very encouraging result. Mr. Lizars directs the water to be as hot as the hand can bear—in quantity three or four pints, with a teaspoonful of laudanum. In cases where it was retained in the intestines for the period of an hour, it has come off quite cold. If reaction does not take place, the injection should be renewed in less time than an hour,—the former one having been sucked off by the enema pump. The chief agent here is heat applied to a large intestinal surface, and the plain hot water thus repeated, has been found more efficacious in relieving the spasms and collapse than the laudanum. By keeping the fingers on the anus for five minutes, the sphincter would generally resume its tone, and the injection will be retained for hours together: but should an occasional cure of relaxed sphincter occur, the plan of Dr. Clanny, of Sunderland, will answer very well; it is to merely plug the rectum with a thick greased wax candle.

The more stimulating injections of spirits of turpentine, camphor, &c. are retained but a short time—they cause much local irritation, and at times bloody discharges, without favouring general reaction—and on good grounds are objected to.

Swayed by an hypothesis that there is a spasmodic stricture of some of the important organs, as of the ventricles of the heart, the intestines, and of the duct of the gall-bladder, and of the urinary bladder, as well as of the secreting organs; some of the British practitioners have prescribed tobacco enemata. It is used in infusion, made with half a drachm to a drachm of the tobacco, in a pint of water. Mr. Baird, of Newcastle (England), the originator, we believe, of this practice, tells us, that if his pathological “opinion had been at variance with the fact, the powerful remedy he had adopted, must of necessity have hurled the patient into the grave;” but the cases which Dr. Kirk appends to his essay on Cholera, would seem to entitle it to some confidence—yet we cannot forget that the symptoms produced by an over dose of tobacco on a healthy man, are nearly the same as those met with in the collapse of Cholera. That we may not, however, prejudge the doctrine and practice, we shall give the details of a case in which it was used with apparent advantage.* Dr. Kirk says, I have seen ten cases of the exhibition of tobacco myself, and though in two life was not saved, yet in all distinct reaction took place; and all the symptoms were improved.

* See Appendix.

Among the means of alleviating and arresting the violence of the spasms, and enabling us at least to gain time for the administration of other remedies, the application of the tourniquet to one of the limbs merits a trial. We have heard the late Dr. B. R. Reese, of this city, speak in high terms of the beneficial effects of the tourniquet, in cases of the Cholera coming under his charge in Canton, China.

It would seem from the best evidence furnished us in the treatment of Cholera, that, whilst we may be justifiably prodigal of external remedies to rouse the collapsed capillaries to action, and the transmission of blood, we cannot by any means exercise the same freedom in the employment of internal stimuli. In the collapse of Cholera, we have, not a case simply of debility, but of debility and congestion—it is desirable to rouse, it is true, and to equalize the action of the system, and to relieve the oppressed viscera. But we well know that this is not to be accomplished readily or safely, by much internal stimulation. In apoplexy, and even in asphyxia, we are not free to use these without limitation and wise discretion. In that stage of disease which bears the closest analogy to the collapse of Cholera—we mean the chill of intermittent fever—the prodigal use of internal stimuli would seem to be called for by all the symptoms in the case. Yet, aware of the subsequent reaction, we well know that no small reserve is requisite, in the administration of such remedies. During the chill, they have very little effect—they are, as it were, in almost insensible cavities, in the stomach and bowels; but the hot stage supervening, and the susceptibility of the parts restored, they powerfully stimulate, and even irritate—increasing the fever, causing delirium, and phlogosed stomach, and leaving a more imperfect remission than would have followed, had their use been entirely withheld. But not only are we wary of using internal stimuli in the cold stage of intermittent fever—we even on occasions have recourse to sanguineous depletion at this time.* We have

* The following case is so confirmatory of the above views, that we are persuaded it will interest our readers—we give it as related by one of the authors of this Essay, Dr. Bell, in the North American Medical and Surgical Journal, Vol. VIII. The patient had had an attack of bilious fever, for which he had been repeatedly bled from the arm, and cupped over the abdomen. Convalescence seemed about to be established. “The patient gained very little strength, although he was allowed light animal broth and farinaceous food. Visited in the afternoon of September 17th of last year [1823], I found him in a state of great apathy, with an inclination to dose. The pulse was not materially altered, nor was there any other new symptom. A blister was di-

ourselves done so, and we have reason to believe, with good effect. This practice has been adopted, and is strongly recommended by Annesley.—(See Appendix.)

The remarks of this writer on the stage of reaction in the true Cholera fever are exceedingly important, and are corroborated by nearly every physician who has witnessed the disease. It would be well if we could almost forget the existence of the previous stage of prostration and collapse, if it so far occupy our minds as to induce a dominant idea and fear of debility, and lead to the exhibition of stimuli in this reaction or third stage. It is in the complications of symptoms, by phlegmasia of the gastric intestinal surface and oppression of the brain at this period, that the injurious effects of the unrestricted use of brandy and laudanum in the early stages, including the period of collapse, become evident. It is at this juncture that we must draw upon the resources of rational pathology, and be guided in our practice by the symptoms of lesion and inflam-

rected to the back of the neck, and a laxative of rhubarb and magnesia at bed-time. At 11 o'clock, P. M., I was sent for in great haste, and on my arrival found the patient in a state of complete coma, utterly insensible to all objects of sight, sound, and touch; his limbs, at first extended, remained in whatever position they were placed; the pulse was barely perceptible, and the breathing very slow. It was impossible to make him swallow any thing, or to elicit from him the slightest evidence of consciousness. On applying my hand to the epigastrium, I could feel the abdominal aorta beat with considerable force; so also did the carotids. The contractions of the heart were frequent, and laborious. The blister had been put on, but no medicine taken. Sixty leeches were now applied over the epigastrium, and sinapisms to the extremities. After the leeches had begun to fill, the pulse lost somewhat of its extreme tenuity, and by the time they were detached, it had regained its natural volume, was soft and easily compressible. The patient at this time began to move his eyes and the muscles of his mouth and face; he turned a little towards one side, yawned and stretched himself. The extremities were still cold and unaffected by the sinapisms. Before all the leeches were removed, the skin became moist in places; and finally a sweat covered the face, trunk, and limbs, with the exception of the hands and feet. Enemata of tepid water were administered at different times throughout the night. In the morning, though languid, he was partially sitting up in bed, by leaning on his elbow, helping himself to some light nutriment. In the afternoon of this day he experienced some rigours, which disappeared in the evening in moisture on the skin.

“On the evening of the following day, 19th, by eight o'clock, he was in nearly the same state as on the 17th, being completely comatose. Cups in large numbers were now applied to the temples, and over the abdomen, so as to detract about ten ounces of blood. The effect was most salutary, and the recovery even more prompt than from the first attack. Enemata of cold water were given on the present occasion.”

mation of the organs. Patience and firmness are now virtues to be put in requisition—the former to prevent undue haste in forcing up the system to an imaginary standard of strength by stimuli, the latter to induce perseverance in judicious local depletion and cooling practice, to moderate the excitement of particular organs, and prevent disorganizing inflammation in them—the stomach, intestines, or brain.

Children, we are told, recover sooner than adults from the cataleptic or collapsed state. The first mark of rallying in them, was a slight injection of the conjunctiva, with marks of general restlessness and tossing of the head. After these, follow often all the symptoms of cerebro—meningeal, or hydrocephalic inflammation, which, unless rapidly controlled, cut off the patient. In one case of this kind, Mr. Fife, of Newcastle, had leeches applied to the head twelve times.

In the Appendix, we have subjoined a sketch of the practice, in Cholera, of some of the most eminent medical men of Newcastle. When compared with that of Annesley, and others in India, and of some of the chief physicians on the continent of Europe, the reader will discover that, except in the article of calomel, there is not such a discrepancy in the employment of remedial means generally, where the disease has prevailed, as many, from superficial observation and reading, have imagined.

In the “Observations on the Cholera of Paris,” by two intelligent young physicians of this city, Drs. Pennock and Gerhard, we are pleased to find a general confirmation of the views expressed in the preceding pages, respecting the pathology and treatment of the disease. These writers lay great and deserved stress on the danger from inflammation after reaction. For a summary of the treatment recommended by Drs. Pennock and Gerhard, our readers are referred to the Appendix.

We have not mentioned the inhalation of oxygen gas, nor the use of galvanism, among the remedial agents in Cholera, because the few trials made of them, have not been so encouraging as to attempt their repetition, even could this be done with less difficulty than necessarily obstructs their employment.

APPENDIX.

(A.)—Referred to page 46.

EARLY NOTICES OF EPIDEMIC CHOLERA.

(From the Report of the Madras Medical Board.)

[Noticed by Bontius in 1629.] The Dutch Physician, Bontius, who wrote in the year 1629, at Batavia, thus describes Cholera Morbus. “ Besides the diseases above treated of as endemic in this country, the Cholera Morbus is extremely frequent; in the Cholera, hot bilious matter, irritating the stomach and intestines, is incessantly, and copiously discharged by the mouth and anus. It is a disorder of the most acute kind, and therefore requires immediate application. The principal cause of it, next to a hot and moist disposition of the air, is an intemperate indulgence of eating fruits; which, as they are generally green, and obnoxious to putrefaction, irritate and oppress the stomach by their superfluous humidity, and produce an æruginous bile. The Cholera might, with some degree of reason, be reckoned a salutary excretion; since such humours are discharged in it, as, if retained, would prove prejudicial. However, as by such excessive purgations the *animal spirits are exhausted, and the heart, the fountain of heat and life, is overwhelmed with putrid effluvia, those who are seized with this disorder generally die, and that so quickly, as in the space of four-and-twenty hours at most.*

Such, among others, was the fate of Cornelius Van Royen, steward of the Hospital of the sick, who being in perfect health, at six in the evening, was suddenly seized with the Cholera, and expired in terrible agony and convulsions before twelve o'clock at night; the violence and rapidity of the disorder surmounting the force of every remedy. But if the patient should survive the period abovementioned, there is great hope of performing a cure.

This disease is attended with such a weak pulse, difficult respiration, and coldness of the extreme parts; to which are joined great internal heat, insatiable thirst, perpetual watching, and restless and incessant tossing of the body. If, together with these symptoms, a cold and fetid sweat should break forth, it is certain that death is at hand.

In treating of the “ Spasm,” this author gives the following account. “ The disorder of the Spasm, almost unknown with us in Holland, is so common in the Indies, that it may be reckoned among the popular and endemic diseases of the country. The attack of it is sometimes so sudden, that people become in an instant as rigid as statues; while the muscles, either of the anterior or posterior part of the body, are involuntarily and violently contracted. A terrible disorder! which, without any primary defect of the vital or natural functions, quickly precipitates the wretched sufferer in excruciating torments to the grave; totally deprived of the capacity of swallowing either food or drink. *There are, likewise, other partial Spasms of the limbs; but these being more gentle and temporary, I shall not treat of them.*

People affected with this disease look horribly into the face of the bystanders (truculente admodum astantes intuentur) especially, as often happens, when the cynic spasm comes on, and both the cheeks are drawn in convulsion towards the ears; a red and green colour is reflected from the eyes and face; (*ruber et viridis color ex oculis et facie oritur*), the teeth gnash; and instead of the human voice, a rude sound issues forth of the throat, as if heard from a subterraneous vault; so that to those unacquainted with the disorder, the person appears to be dæmoniac.”

In speaking of Cholera, Bontius nowhere mentions the *colour* of the matters evacuated. He talks indeed of æruginous bile: but that would appear, from the context, to refer to its assumed acrimonious quality, rather than to any sensible property; and we shall presently see that practitioners of much later times dwell greatly on the supposed bilious and irritative nature of the evacuations, when it is pretty evident, that they were merely speaking hypothetically. His descriptions indeed are not at all full: for, though he does not mention spasm as a symptom of Cholera Morbus, he states that Cornelius Van Royen expired in *convulsions*, within six hours from an attack of it. Still, in his description of Cholera, where "the heart is overwhelmed," where "those who are seized with the disease generally die," and that within twenty-four hours at most; and in his enumeration of symptoms as marked in italics, every one, familiar with the epidemic Cholera as it has prevailed in this country, will probably admit, that he has truly portrayed that disease, and no other.

Although Bontius has treated of "the Spasm," and of "the Cholera Morbus," under separate chapters, it is highly probable that these disorders were one and the same.

It would seem that he has considered the tonic spasm as idiopathic, and the clonic spasm as symptomatic, yet it is evident by the expression, "there are likewise other partial spasms of the limbs," that both these forms of spasm existed in the same patient, a fact which is amply confirmed by innumerable observations in the present epidemic. If it be objected that he does not mention the usual symptoms of Cholera as occurring in "the Spasm," it may be answered, that neither does he mention the state of the skin, of the pulse, nor of respiration, which functions it is impossible to suppose remained unaffected in such a commotion of the system.

The edition of Bontius, which has been quoted from, is an English translation, published in London, 1769; but, from the passages in the original, as inserted in parenthesis, it is evident that the translation is not quite correct. The expressions, especially, of the eyes and face "*reflecting*" a red and green colour can only be intelligible by supposing, that the former was suffused with blood, and the latter changed to that ghastly and cadaverous hue, so familiar to us all in the collapse stage of Cholera.

[By Dr. Paisley in 1774.] The next notice, in point of time, which we find of Cholera, is in the copy of a letter written by Dr. Paisley at Madras, dated 12th Feb. 1774, as given by Curtis, in his publication on the diseases of India. Dr. Paisley says, "I am favoured with yours, and am very happy to hear you have caused the army to change its ground; for there can be no doubt, from the circumstances you have mentioned, that their situation contributes to the frequency and violence of the attacks of this dangerous disease, which is, as you have observed, a true Cholera Morbus, the same they had at Trincomalee. It is often epidemic among the Blacks, (natives) whom it destroys quickly, as their relaxed habits cannot support the effects of sudden evacuations, nor the more powerful operation of diseased bile.

The first campaign made in this country, the same disease was horridly fatal to the Blacks; and fifty Europeans of the line were seized with it. I have met with many single cases since, and many of them fatal or dangerous, of different kinds, arising from putrid bile being disturbed by accidental causes, or by emetics or purgatives exhibited before it had been blunted or corrected."

Dr. Paisley does not give any particular description of the disease: and though he dwells much on the putridity and acrimony of the bile, he does not allude to the colour or appearance of the evacuations. He observes that "when it (the Cholera) is epidemic here, it is totally a disease of highly putrid bile, which operates on the system as poison, and brings on *sudden prostration of strength, and spasms over the whole surface of the body.*" In relaxed habits, when the *pulse sinks suddenly*, and brings on immediate danger, the same method must be pursued, but with more caution." The letter is quoted by Curtis as referring to the Cholera Morbus, or Mort de Chien: and these extracts will probably be deemed sufficient evidence of the correctness of the reference.

It is highly important to remark, that Dr. Paisley here speaks of the disease as being "*often epidemic*," that it prevailed in that form in the "first campaign," and affected both Europeans and natives. The particular periods here alluded to are not known, but we have seen, by the extract from the records of the Medical Board, that Cholera raged as an epidemic, in 1769, or 70.

[*By Sonnerat from 1774 to 1781.*] Sonnerat, whose travels in India embrace the period between 1774 and 1781, speaks of a disease on the Comandel Coast, in all respects resembling Cholera, and he notices it as "*an epidemical disorder which reigns.*" His account of it is this.

"There is also another epidemical disorder, which reigns, and in twenty-four hours, or sometimes less, carries off those who are attacked. It never appears but in cold weather."

"Debauchees, and those who have indigestions, are attacked with a looseness, or rather with an involuntary flux of the excrementary matter become liquid, but without any mixture of blood. They have no remedy from this current of the bowels,* which they call a sharp flux, but leave the cure to the care of nature."

"The flux of this kind which reigned some years ago, spread itself in all parts, making great ravages: above sixty thousand people, from Cherigam to Pondicherry, perished. Many causes produced it. Some were attacked for having passed the night and slept in the open air; others for having eat cold rice with curds; but the greater part for having eat after they had bathed and washed in cold water, which caused an indigestion, an universal spasm of the nervous kind, followed by violent pains and death, if the patient was not speedily relieved. This epidemical disorder happened during the northerly winds in December, January, and February; when they ceased, the malady disappeared. The symptoms of this disorder were a watery flux, accompanied with vomiting and extreme faintness, a burning thirst, an oppression of the breast, and a *suppression of urine*. Sometimes the deceased felt violent cholicky pains; often lost his speech and recollection, or became deaf, *the pulse was small and concentered*, and the only specific which Choisel, a foreign missionary, found, was treacle and Drogue amere. The Indian physicians could not save a single person."

"There is great reason to imagine that the perspiration being stopped, and reflowing into the mass of blood, by finding its way to the stomach and bowels, occasioned the vomiting, which terminated by this flux."

"That which followed, two years after, was the most dreadful. It did not proceed from the same cause as the first, as it began in July and August: it first showed itself by a watery flux, which came in an instant, and sometimes cut the deceased off, in less than four-and-twenty hours. Those who were attacked had thirty evacuations in five or six hours; which reduced them to such a state of weakness that they could neither speak or move. *They were often without pulse; the hands and ears were cold; the face lengthened; the sinking of the cavity of the socket of the eye was the sign of death*; they felt neither pains in the stomach, cholics, nor gripings. The greatest pain was a *burning thirst*. Some brought forth worms by stool; others by vomiting. This cruel pestilence affected all the castes in general, but particularly those who eat meat, as the Parais. The native physicians succeeded no better in their treatment of this disorder, which was again renewed during the north winds."

It is by no means easy to determine the precise dates of the epidemic visitations of Cholera alluded to in these extracts, as prevailing, in the first instance, "*some years ago*," and in the second, "*two years after*." It is, however, reasonable to suppose, that a disease, which "spread itself in all parts," and carried off "above 60,000 people from Cherigam to Pondicherry," would not have been passed over without some special notice by Dr. Paisley, in his letter dated 1774, already quoted, had it occurred prior to that date. The presumption seems to be, that Mons. Sonnerat described invasions of Epide-

* Probably "*cours de ventre*," in the original. The edition here quoted is a translation by Francis Nagnus, Calcutta, printed 1733.

mic Cholera which took place subsequently to the year 1774. That they were certainly considerably prior to that epidemic which is stated in the records of the medical board to have prevailed "over the whole coast in 1783," is evident, from the date of the work: and consequently, *when viewed in reference to other authorities, it is obvious, that Cholera maintained its influence, with little apparent interruption, from a very remote period, down to a date comparatively modern.* Sonnerat notices the term "mort de chien," as being used in India, but applies it to "indigestions," which "are very frequent," and from which "many have died suddenly."

[*Cholera observed at Mauritius in 1775, and in 1819.*] It appears from the report of a committee of British medical officers at the Mauritius, which was assembled in the month of November, 1819, under the authority of the government, in order to examine into the nature of the epidemic disease which then prevailed at that Island, that the Epidemic Cholera was not unknown there. The following is an extract from the report. "The committee request to say, that they have not, either in this island or elsewhere, met with a disease possessing the characters of that which now prevails: but that, from the reports of several individuals, some of whom belong to the medical profession, it does appear, that a disease, most strongly resembling in its symptoms, progress, and termination, that now under consideration, did for some time prevail in this colony in the year 1775."

The symptoms which are detailed by the committee, as characterising the epidemic of 1819, sufficiently indicate the identity of that disease, with the form of Cholera, which prevailed at the same period, and still continues, on the continent of India. "The symptoms, in the two cases alluded to, perfectly corresponded with those of the numerous instances of the disease, which have since occurred. Those more particularly characteristic of the disease are sudden and excessive prostration of strength, with sinking of the pulse; extreme coldness of the surface of the body, which is covered with cold viscid perspiration; and a distressing uneasy sensation in the abdomen, the progress of which has generally carried off the patient in the space of a few hours."

Dr. Burke, the chief medical officer in the island, makes the following observation in his letter transmitting the report of the committee. "*A similar disease prevailed in this island in 1775, after a long dry season, &c. the symptoms, fatal and sudden effects, and duration, of the disease, would seem to be exactly the same.* A hurricane put a stop to its ravages, which continued for probably two months, and caused a great mortality, particularly among the Blacks and people of colour."

But it is necessary to state, that a committee of French medical gentlemen, who were assembled under similar circumstances with the British Committee, make no mention of the epidemic visitation of 1775. Assuming, however, the circumstance to be true, it is highly worthy of remark, that while, as we have shown in the preceding pages, the Indian continent suffered under Cholera, about that period, viz. 1775, the disease had then also extended to that remote island.

[*At Ganjam, in 1781.*] Cholera appears to have manifested itself pretty extensively as an epidemic in 1781; its appearance on this occasion is thus noticed in the report on Cholera by Mr. Jameson, secretary to the Calcutta Medical Board. "A Division of Bengal troops, consisting of about 5,000 men, was proceeding, under the command of Colonel Pearse of the Artillery, in the spring of 1781, to join Sir Eyre Coote's army on the coast. It would appear, that a disease resembling Cholera had been prevalent in that part of the country, (the Northern Circars,) some time before their arrival; and that they got it at Ganjam on the 22d March. It assailed them with almost inconceivable fury. Men, previously in perfect health, dropt down by dozens; and those even less severely affected were generally dead or past recovery within less than an hour. The spasms of the extremities and trunk were dreadful; and distressing vomiting and purging were present in all. Besides those who died, above five hundred were admitted into hospital on that day. On the two following days, the disease continued unabated, and more than

one half of the army was now ill." In a note it is added, "The occurrence of the disease on this occasion is noticed in a letter dated 27th April, 1781, from the supreme government to the court of directors; and the destruction which it caused in this detachment mentioned in terms of becoming regret."

After adverting to its progress in the Circars, the letter thus proceeds: "The disease to which we allude, has not been confined to the country near Ganjam. It afterwards found its way to this place (Calcutta); and after chiefly affecting the native inhabitants, so as to occasion a great mortality during the period of a fortnight, it is now generally abated, and pursuing its course to the northward." It would have been interesting to have traced this disease, as it seemed to have put on the epidemical form, but every attempt to discover its further progress has proved fruitless.

[Noticed by Curtis, in 1782.] From this period, up to the year 1787, and perhaps even to 1790, the Cholera would appear to have existed epidemically, in various parts of India. Curtis states, that the fleet, in which he served, joined Sir Edward Hughes's squadron at Madras, in the beginning of 1782; in May of that year, his ship, the Seahorse, arrived at Trincomalee, and he says, "The mort de chien, or cramp, I was also informed by the attending surgeon, had been very frequent and fatal among the seamen, both at the hospital and in some of the ships, particularly in the Hero and Superb." The Seahorse had no case of the disease till the 21st of June, when between that day and the 25th they had eight cases.

"In every one of the eight cases the symptoms were so much alike, both in order and in degree, that a description of any one would answer almost equally well for every other. Any difference that took place was in the suddenness of the attack, or the rapidity with which the symptoms succeeded each other. In all of them the disease began with a watery purging, attended with some tenesmus, but with little or no griping. This always came on some time in the night, or early towards morning, and continued some hours, before any spasms were felt; and slight affections of this kind being very common in the country, the patients seldom mentioned them till they began to be more severe, and extended to the legs or thighs. *This purging soon brought on great weakness, coldness of the extremities, and a remarkable paleness, sinking and lividity of the whole countenance.* Some at this period had some nausea, and retching to vomit, but brought up *nothing bilious.* In a short time the spasms began to affect the muscles of the thighs, abdomen, and thorax, and lastly they passed to those of the arms, hands and fingers; but I never saw, then or afterwards, those of the neck, face, or back, at all affected. The rapidity with which these spasms succeed the first attack, and their severity, especially as affecting the muscles of the thorax and abdomen, denoted in general the degree of danger in the case. The affection is not, as in *tetanus*, confined to a single muscle, or to a certain class of muscles only. Neither does it, as in the spasmus clonicus, move and agitate the members. It is a fixed cramp in the belly of the muscles, which is gathered up into a hard knot, with excruciating pain. In a minute or two this relaxes, is again renewed, or the affection passes to others, leaving the miserable sufferer hardly an interval of ease: and, lastly, it passes from one set to another; from those of the inferior extremity to those on the upper parts, leaving the former free. The patients complain much of the pain of these cramps; think they obtain some relief from friction of the parts, and cry to their companions to rub them hard. As the disease proceeded, the countenance became more and more pale, wan, and dejected; *the eyes became sunk, hollow, and surrounded with a livid circle. The pulse became more feeble, and sometimes sank so much as not to be felt at the wrist, in two or three hours after the spasms came on.* But so long as it could be felt, it was but little altered in frequency. If the spasms happened to intermit, it would sometimes rise a little, and the countenance assume a better look. The tongue was generally white, and more or less furred towards the root; the patients had all *great thirst, or rather a strong desire for cold drinks; but there was no head-ache or affection of the sensorium commune throughout.*"

"The coldness of the extremities, which was perceptible from the very

first, continued to increase, and spread over the whole body, but with no moisture in the skin till the severity of the pain and spasms forced out a clammy sweat, which soon became profuse. *The hands now began to put on a striking and peculiar appearance. The nails of the fingers became livid, and bent inwards; the skin of the palms became white, bleached, and wrinkled up into folds, as if long soaked in cold water;* the effect, no doubt, of the profuse cold sweat, which is one of the most pernicious and fatal symptoms of the disease, both from the effect it has in such a climate, of exhausting the strength, and in abstracting heat from the system. In some of the present cases, and in many others after this, we had recoveries from the severest degrees of spasmodic affection; even where the pulse had been for hours completely lost at the wrist, and the body perfectly cold; but never of any who had these profuse cold clammy sweats, and where the hands had put on this appearance."

"All this while the purging continued frequent, and exhibited nothing but a *thin watery matter or mucus*. In many, the stomach became at last so irritable, that nothing could be got to rest upon it; but every thing that was drank was spouted out immediately; without straining or retching. *The countenance and extremities became livid, the pulsations of the heart more quick, frequent and feeble;* the breathing began to become laborious and panting; and, in fine, the whole powers of life fell under such a great and speedy collapse, as to be soon beyond the power of recovery. In this progression, the patient remained from three to five or six hours from the accession of the spasms; seldom longer. These began at last to abate, but with more internal oppression, great jactitation, panting and gasping for breath, from the diminished action of the respiratory organs; for there were no marks of oppression or effusion on the lungs; and the motion of the heart, so long as it could be felt, became more and more quick and irregular, till death came at last to the relief of the miserable sufferer. Sometime before that event took place, *the spasms gradually abating, left the sufferers entirely, and so much possession of their faculties did they retain, that they would continue to talk sensibly to their messmates, to the last moment of their life, even when the whole body had become perfectly cold, and all pulsation of the heart had ceased for a long time to be distinguishable.*"

"About the middle of July, 1782, I entered on duty at Madras hospital. Here, again, I had occasion to see many more cases of the mort de chien. It was frequent in the fleet in the month of August, and beginning of September, the season at which the land wind prevails on this part of the coast. We had some cases in the hospital in the end of October, and in November after the monsoon, but few in comparison."

[Also by Birdleston.] Although Cholera would thus appear to have been of limited prevalence in the naval hospital at Madras, in October, 1782, its influence was most severely felt at that period by the newly-arrived troops from England, as stated by Girdleston in his essay on spasmodic affections of India.—He observes, "spasms were the first disease which appeared amongst the troops who arrived at Madras in October, 1782, under the command of Major General Sir John Burgoyne. More than fifty of these fresh men were killed by them within the first three days after they were landed in that country, and in less than a month from that time, upwards of a thousand had suffered from attacks of this complaint."

"The symptoms which commonly first presented themselves were coldness of the surface of the body, especially of the hands, feebleness of the pulse, and spasmodic contractions of the lower extremities, soon extending to the muscles of the abdomen, diaphragm, and ribs. As the spasms advanced, the muscles might be seen to assume the rigidity of cartilages; sometimes causing the body to remain immoveably extended, sometimes bending the trunk through its whole length, anteriorly; and sometimes, though seldomer, backwards. The parts in which the spasms began generally remained rigid; but those which were subsequently seized with them, had momentary intermissions of the contractions; the only intervals of relief experienced by the patient from the most tormenting pains. *The hands and feet then generally became sodden,*

with cold sweat, the nails livid, the pulse more feeble and frequent, and the breath so condensed as to be both seen and felt, issuing in a cold stream, at a considerable distance. The thirst was insatiable, the tongue whitish, but never dry; vomitings became almost incessant; the spasms, cold sweats, and thirst, increased with the vomitings; which last, if not checked, soon terminated the existence of the patient." "In this manner, most commonly, was the succession of phenomena; but often they were so rapid in their attack, that they seemed to seize the patient all in conjunction instantaneously."

"In some few, the extremities remained warm; in others, also, the spasms were only clonic or convulsive. Some died in the first hour of the attack; others lived a day or two with remissions; when they died, either of universal spasms or an apoplexy. *On dissection of the bodies after death, it appeared that no injury had been sustained by the brain, liver, gall-bladder, stomach, or heart.* The prognosis of this disease is formed with greater certainty from the warmth or coldness of the extremities, than from either the universality of the spasms, or the frequency or steadiness of the pulse. Thus, if the spasms were ever so general, with warmth of the extremities, there was no immediate danger: on the contrary, if the spasms were ever so trifling, with coldness, there was every danger to be feared."

Girdleston, like Bontius, treats of the "spasms" as an idiopathic disease; yet it is obvious from his observations on the prognosis, that spasm was merely a symptom, and one of secondary importance. He has not noticed purging, and from the casual way in which vomiting is mentioned, it seems doubtful whether we are to consider purging to have been inadvertently omitted, or that it really was not present, as has often been observed to be the case on late occasions. It is accordingly assumed that the "spasm," described by Girdleston was, in fact, the Spasmodic Cholera, or Mort de Chien of Curtis.

It is also noticed in the Bengal Report, that in the month of April, 1783, Cholera destroyed above 20,000 people, assembled on occasion of a festival at Hurdwar; but it is said not to have extended to the neighbouring country. All these authorities would seem accordingly to establish the fact of the prevalence of Cholera in India; and especially of its existence during the period extending from 1769-70 to 1787, when we find the first notice of the disease in the records of this office as given in the extracts, page 239, and which we now come to consider.

[*Dr. Duffin's account of it at Vellore, in 1787.*] Dr. Duffin, in a letter dated the 28th October, 1787, says, "I returned yesterday from Arcot, where I had an opportunity of seeing the situation of the sick. The Cholera Morbus rages with great violence, with every symptom of putrescency, and so rapid in its progress, that many of the men are carried off in twelve hours' illness." Dr. Duffin considered the disease to depend on putrid bile: he recommended castor oil, external heat, frictions, and the internal exhibition of warm cordial drinks, as the plan of treatment he had always found successful. In a subsequent letter, dated the 3d of November, he enters more fully on the nature of the disease. "The symptoms were generally pretty much the same in all I have seen, only the violence of the spasms was greater according to the stamina of the patient, and the quantity of putrid matter in the primæ viæ. They are generally seized with a nausea, frequent heats and chills, a dryness of the skin, and numbness and uncommon sensation, as they express it, in different parts of their body. Then came on cold sweats, severe gripings, and mostly a purging of bilious colluvies, appearing often in ferment like yeast, and not unlike it in colour, with a putrid offensive smell, retchings to vomit, often bilious, and at other times scarce any thing is brought up but the liquor that is drank; an intense thirst, oppression on the præcordia, with difficulty of breathing; frequently the spasms begin with the first attack, though sometimes they only appear as the disease advances, and then generally affect the lower extremities, afterwards the abdominal muscles; and the whole system becomes convulsed. The pulse from the first sinks, and at times is scarcely to be felt; profuse clammy cold sweats, and a pallid hue overspread the body; the countenance ghastly, the eyes sunk, and the voice scarcely to be heard, with great dejection. The tongue in general

moist till near the close of the disease, when it becomes dry and foul, and the breath offensive; the urine generally pale and in small quantity."

It is to be observed, that Dr. Duffin, at the period in question, was stationed at Vellore, about 14 miles from Arcot; and that his description of the Cholera could not be founded on any lengthened observation of the cases at the latter station, since he only made a very short visit to it. There seems some reason to doubt, therefore, whether he was not describing partly what he saw at Arcot, and partly what he had more experience of at Vellore, where the Cholera was then also raging, but not in a very dangerous degree. His confident allusion to the bilious nature of the contents of the primæ viæ, and the success of castor oil in curing the disease, may lead us to suppose that at Vellore he had in fact to contend chiefly with the Cholera Morbus, as it is commonly termed, not with the Epidemic or Spasmodic Cholera. This conclusion is supported by a reference to the sick returns, which happen in this instance to be somewhat less meagre and imperfect than they generally are found to be at that distant period.

It appears that, during the month of October, 1787, twenty-two Europeans were admitted into hospital with "Cholera Morbus" at Vellore, and two natives; of whom it cannot be ascertained that any died, for the returns of that period do not show the disease from which the casualties arose; however, only two Europeans died during that month at Vellore from any disease, and not one native. At Arcot, on the contrary, 35 Europeans are entered in the sick returns, under the head of "Cholera Morbus," in October, 1787, but no natives; and 25 Europeans died that month, a number which falls short of what Dr. Davis distinctly attributes to Cholera alone. In November, 45 Europeans are returned at Vellore under the head of "Cholera Morbus," and one native; only one European died that month at Vellore. At Arcot, 17 Europeans are returned in November as ill with "Cholera Morbus;" only one death took place in all, but during this month, it seems to have slightly affected the natives, 12 being returned, of whom none died; there were at this time four regiments of native cavalry quartered there. It seems reasonable, therefore, to infer that the disease prevalent at Arcot, and described by Mr. Davis as "spasmodic affection of the nervous system," was not the same, in general, with that which existed at Vellore, unless we impute a degree of efficacy to castor oil which can hardly be admitted.

[*Dr. Davis's Account of it at Arcot, in 1787.*] Mr. Davis, a member of the then Hospital Board, appears to have been deputed from Madras to investigate the nature of the sickness which prevailed at Arcot. In his report to the Board, which is dated the 29th of November, 1787, he states as follows: "I found, in what was called the epidemic hospital, three different diseases, viz. patients labouring under the Cholera Morbus, an inflammatory fever, with universal cramps; and a spasmodic affection of the nervous system distinct from the Cholera Morbus. I understood from the regimental surgeon, that the last disease had proved fatal to all who had been attacked with it; and that he had already lost seven-and-twenty men of the regiment in a few days. Five patients were then shown me with scarce any circulation whatever, to be discovered; their eyes much sunk within their orbits; their jaws apparently set; their bodies universally cold, except at the præcordia, and their extremities livid. Mr. Pringle observed that these five men were attacked on the 26th October, that Mr. Duffin had seen them, and had recommended castor oil to be administered, &c. &c."

He then goes on to say, "finding on the day of their attack, the rectum had discharged its contents in the action of straining to vomit without being able to bring any thing up, I directed a stimulant injection to each of these patients which produced a copious discharge of fæces, without any bilious induration (indication?) whatever." Having prescribed some antispasmodic medicines, he says, "from all which I had the pleasure to observe, that in four-and-twenty hours after my first visit, the spasms had totally subsided, the patient's voice, which all along had been so low as scarce to be heard, was returned almost to its natural state; the pulse that was imperceptible, full and even." After ordering some carminating purgatives, he observes,

"I attended to the operation of these respective medicines, and could discover no bilious indication in the whole system."

Two of the five patients having died in a few minutes after being taken out of a hot medicated bath, "upon dissection the duodenum was found distended with putrid air; the other intestines empty, except the colon and rectum, in which latter there were indurated fæces; the whole viscera sound, the gall-bladder turgid, but not diseased!"

Mr. Davis does not state the symptoms of the "inflammatory fever with violent cramps," farther than that the patient complained of a "tightness of the abdomen with a costive habit." The "cholera morbus" was distinguished by "spasms of the præcordia, and cramps of the extremities, with bilious lientery, and a copious discharge from the stomach of a green, yellow, and dark-coloured bile. During his residence at Arcot, upwards of sixty patients labouring under these three forms of disease were admitted, and only two or three deaths ensued. The dissection of a case is given, where, it is stated, "*the bladder was most singularly contracted, and did not exceed in size a large nutmeg, yet without inflammation, or any apparent disease, except its contracted state.*"

[*Mr. Thompson's account of it, at Arcot and Trincomalee.*] Mr. Thompson, surgeon, who was also sent to Arcot at the same time with Mr. Davis, observes, "This disease is exactly the same as prevailed at Trincomalee in the months of April and May, 1782, when the season was very hot and chill, the winds blowing from the land, and reaching some leagues to sea. The weather here at present is the same as I experienced at Trincomalee." Mr. Thompson also gives an account of a dissection where "the gall-bladder was exceedingly distended with bile, so much so as to appear protruded some inches below the liver, and to contain near six ounces of bile. No marks of putrescence in any of the abdominal viscera. *The urinary bladder quite empty and contracted to the size of a walnut; the stomach and duodenum both empty of bile, and no appearance of inflammation in any part of the intestinal canal or peritoneum.*"

To persons familiar with the progress of Cholera during late years, there can be little difficulty in understanding and reconciling the apparent discordances in the accounts just quoted. Many instances of the common Cholera would seem to have occurred at Arcot, as well as at Vellore, where, it has been conjectured, this form of the disease chiefly prevailed. Some cases seem to have commenced with a degree of febrile excitement, an occurrence which has been occasionally observed in the present epidemic; or perhaps, these cases might be properly referred to a species of febrile affection with cramps, of which we have a very distinct history by Mr. Anderson, who observed the disease at Ellore in 1794, and styled it a "Causus;" lastly, that which Mr. Davis characterises as a "spasmodic affection of the nervous system distinct from Cholera Morbus," was no doubt the same low and dangerous form of the disease with which we have become too well acquainted in recent times.

The disease would seem to have lost its force at the period when Mr. Davis arrived at Arcot; for we find that the five cases, of the low form, which he first saw, had lingered from the 26th to the 29th; and few of the subsequent seizures proved fatal, which is quite analogous with our present experience.—Whether the bowels were less generally affected in that epidemic, or whether the means employed, and the prolongation of life for three days, had given rise, in the cases in question, to fæcal formations, and to their accumulation in the large intestines, it is not easy, from the scantiness of our information, to decide. But, if any doubt could be entertained of the cases described being Cholera, such as we have lately witnessed, the testimony of Mr. Thompson to their identity is conclusive, if we admit that the mort. de chien of Curtis, which he states to have prevailed at Trincomalee at the time mentioned by Mr. Thompson, was really Cholera.

[*Cholera noticed in 1790 in the Northern Circars.*] It is stated in the Calcutta report, that "Cholera was again very prevalent and destructive in a detachment of Bengal troops marching through the Northern Circars, in the

months of March, April, May and June, of 1790. "The disorder was characterised by precisely the same symptoms which marked the late epidemic. It began with violent pain and spasm in the stomach and bowels; which were followed by purging, vomiting, and all the signs of extreme debility."

[Noticed by Dr. James Johnson.] The next account we have of Cholera is to be found in Dr. Johnson's work on the diseases of the tropical climates. It does not appear in that work, that Cholera was then epidemical, but it would seem to have occurred pretty frequently, both on shore, and on ship board, chiefly in the vicinity of Trincomalee. The precise date is not mentioned; it is concluded, however, to have been about 1804. Dr. Johnson does not detail the symptoms with much minuteness, contenting himself with those occurring in one or two cases, and referring generally to Curtis's description of the disease, a pretty satisfactory proof that they were the same. A seaman on awaking after a debauch, repaired to the deck, and there again fell asleep, during the chilly part of the night. "About 4 o'clock in the morning, he awoke with a shiver and left the deck, but was soon seized with frequent purging and griping, his stools consisting of mucus and slime. Nausea and retching succeeded; nothing being ejected but phlegm, and the contents of the stomach. His pulse was now small, quick, and contracted; his skin dry, but not hot. About eight o'clock in the morning he began to feel spasms in different parts of his body, which soon attacked the abdominal muscles, and threw him into great pain. During these paroxysms, a cold clammy sweat would be occasionally forced out, especially in the face and breast. The extremities now became cold; his features shrunk; the stomach rejecting every thing which was offered, either as medicine or drink. The abdomen and epigastrium all this time were distended and tense, with incessant watery purging and painful tenesmus. By ten o'clock his pulse could scarcely be felt: his breathing was oppressed and laborious, his eyes sunk, and the whole countenance singularly expressive of internal agony and distress. The extremities were cold, shrivelled, and covered with clammy sweats. The violence of the spasms now began to relax; and by eleven o'clock, or seven hours from the attack, death released him from his sufferings." "This may serve as a specimen of the worst form of that dreadful disease, which has obtained the appellation of "mort de chien," or the "death of a dog."

[Cholera supposed to have been met with at various times since 1787.] Since Cholera has become familiar to the older practitioners here, many, perhaps all of them, recollect having met with insulated cases of that disease, as well as of sudden, and often fatal illness, which they, at the moment, could not well understand, and which consequently, proved extremely embarrassing. Such cases would no doubt be attributed by different practitioners to different causes, and be referred to different heads of disease, according to the various states in which the patients were seen; and, perhaps some of them were considered to be merely anomalous instances of common Cholera; but late experience has now very generally led to the opinion, *that they were, in fact, cases of Spasmodic Cholera.* The records of the medical board throw no light on this subject. The number of cases of the description alluded to, which may have entered the military hospitals, could not however, in all probability, have been great, without attracting observation. It might perhaps be thought that the necessity of classing the cases in the official returns would have led to their being detected by a bare inspection of these documents; but in the absence of any nosological arrangement, which then distinguished the returns, no difficulty would be experienced in disposing of them.

Sporadic cases of Spasmodic Cholera might naturally produce the impression that some poisonous matter had been swallowed, which other circumstances would contribute to render sufficiently plausible; for, it is notorious, that intoxicating liquors are prepared by the natives, and clandestinely sold to the European soldiery, which contain the most deleterious matters, and which often produce fatal consequences to those who drink them. The symptoms attending such cases are frequently very anomalous and perplexing.

Although the natives are less prone to debauch in spirituous liquors, they are yet not altogether to be exempted from the reproach; and the notion of a poison having been swallowed, would, in their case, be rendered still more probable, from such occurrences being not unknown amongst them, and from our ignorance of the nature of the poisons which are used.

It must be admitted, however, that very few cases either of sudden death, or poisoning, or Cholera, are to be found in the returns; but it will be presently shown, that no positive conclusion can thence be drawn against the existence of Spasmodic Cholera prior to the year 1818, when it appeared epidemically in these territories; and that some at least of the cases designated as Cholera in former times, were clearly of the spasmodic species.

[*Described by Mr. J. Wyllie in 1814.*] Mr. John Wyllie, in his report, dated 20th July, 1818, (page 68) makes the following remarks: "Before concluding, I think it proper to add, that although I have never, before the late occasion, seen this peculiar disease prevailing as an epidemic, yet I have at various times met with single cases of it in the most aggravated form, and I am much mistaken, if I have not recorded two particular instances of it in my journal of the 1st battalion 24th regiment, for the month of June, 1814, under the names of Paramuttee, and Madaramooto, sepoys." On referring to these cases which have been preserved, Mr. Wyllie's conjecture seems to be fully confirmed. The first case is thus described: "Jaulnah, 19th June, 1814, P. M. $\frac{1}{2}$ past 2. He is in a state of the most extreme exhaustion, unable to move or speak, features contracted; eyes sunk, half open, and of a dull lustre; countenance bedewed with a cold sweat; pulse low, skin cold. Has been vomiting and purging very frequently since 7, A. M. and had all yesterday been affected by a watery diarrhœa;" at 3, P. M. he "is greatly distressed by excruciating crampy pains of the thighs and legs;" at 9, P. M. "complains of thirst, tongue moist;" on the 20th he "continues very low; countenance still of a ghastly appearance;" "alvine discharges copious, alone of ash-coloured slime." The patient recovered. The next case is on the 24th June, 7, A. M. "Is in great distress from violent crampy pains of the muscles of the upper and lower extremities, but more particularly of the fingers; there is great prostration of strength; countenance ghastly; surface cold; pulse gone; much thirst. He had a very copious watery purging on him since one o'clock this morning. He attributes his complaints to having slept last night on the damp ground, and in the open air, while on guard; at 9, A. M. "pulse just perceptible;" at 2, P. M. "slight giddiness, eyes red, says he has much appetite;" at 6, P. M. "one copious pale watery evacuation." This man also recovered, and both were treated with opium, and diffusible stimuli.

[*Also by Mr. Cruickshanks in 1814.*] Another incidental notice of Cholera has led to the discovery of that disease having prevailed to a remarkable extent, at the same time, and much in the same neighbourhood, as in the preceding instance. The late Mr. J. J. Duncan, in a report dated 1st September, 1819, after making some observations on the comparative advantages of dry and moist heat, externally applied, goes on to say, "in the month of June, 1814, when the Cholera appeared with great severity, in the 1st bat. 9th regt. N. I. on its march from Jaulnah to Trichinopoly, I employed exactly the same plan of exciting heat, (heated sand,) and found the greatest benefit resulting from it." "The disease in the 9th regiment in 1814, resembled in every particular, (with the exception of the heat at the præcordia,) the Cholera at present so common, although it could not be called epidemic. The best behaved, the most robust, and the most active, were attacked, and suffered equally as much as any patient I have seen with the Epidemic Cholera; out of a very considerable number of patients I only lost one man; the number I could not specify, as I was ordered back to Jaulnah on duty about ten days after the appearance of the disease, and before the monthly returns were dispatched."

On referring to the returns of that corps, it appeared, that in the month of June, 1814, ninety-nine cases of "bowel complaint" were entered, of which fourteen proved fatal; and about sixty cases of the same disease were ad-

mitted in the succeeding two months, of which, however, very few died. As these returns made no allusion to Cholera, and as they were signed by Mr. Cruickshanks, a reference was made to him for information, respecting the preceding observations of Mr. Duncan, which has drawn forth the very valuable report inserted at page 234; and bearing date the 17th June, 1823. It now appears, that a brigade of two battalions of N. I. marched from Jaulnah on the 29th May, 1814, and that about the 10th or 11th of June a disease broke out in one of the corps which there can be no doubt was the Spasmodic Cholera. "*When taken into the hospital,*" Mr. Cruickshanks observes of the first cases he saw, "*they exhibited all those symptoms now so well known, of persons labouring under the advanced and fatal stage of Epidemic Cholera; the skin cold, and covered with cold perspirations; the extremities shrivelled, cold, and damp; the eyes sunk, fixed, and glassy, and the pulse not to be felt. These persons all died, and I find, on referring to such notes as I have preserved, that, influenced by consideration of the vascular collapse, and total absence of arterial pulsation, I had denominated the disease Asphyxia.*" Many sepoy were brought into hospital in circumstances approaching to those above detailed. Of them, in a considerable proportion, the disease terminated fatally. *Thus the cases which I first saw of this malady, in the aged, among the camp followers, differed in no respect from the worst cases of that affection since so well known under the name of Spasmodic Cholera.* That name, however, I did not adopt, neither in my public reports, nor in the private notes which I took at the time. In this I was chiefly influenced from considering the nature of the matter ejected by vomiting and by stool, which in Cholera is said to consist of bile, but *which in these cases was aqueous or mucilaginous.* Besides, it is evident that the diluent treatment, recommended in Cholera, could never be applicable to such a disease as that with which I had to contend. I continued therefore to employ in my reports the term "bowel-complaint," both because I found it in the hospital books on joining the corps, and because, if it conveyed no very precise idea of the malady which it was meant to designate, it was at least an appellation whence no erroneous impressions could be derived."

This paper by Mr. Cruickshanks is of great importance, *inasmuch as it evinces that Cholera did exist to an extent not hitherto suspected to have occurred at so recent a date; and also that even under these circumstances, no trace of it is found in the public records, for, unless we had been guided by the incidental remark of Mr. Duncan, made five years after the occurrence, and had most fortunately been able to refer to Mr. Cruickshanks, the medical returns of the corps never could have led to a knowledge of it.* Hence, as already observed, though Cholera very rarely appears in the sick returns of former times, *it is by no means from thence to be inferred that it did not then exist.*

But this paper is also peculiarly valuable, as showing that the Cholera assumed, on that occasion, one of those singular and unaccountable features which it has frequently manifested in the present times; for, after enumerating various striking atmospherical vicissitudes, change of food, and many other predisposing, remote, and exciting causes of disease, to which the brigade had been exposed, Mr. Cruickshanks goes on to observe, "To none of these causes of disease which I have enumerated, did the natives themselves attribute the sickness and mortality which prevailed; and on considering that of two battalions composing the brigade, alike exposed to all those causes, *one only suffered from the epidemic, the hospital of the 5th N. I. exhibiting not a single case of analogous disease,* those adduced can only be regarded in the light of remote or predisposing causes; while, something or other, acting exclusively on one battalion, must be sought for as instrumental in exciting the malady." We shall have occasion hereafter to revert to this particular subject; at present it is mentioned as showing that Cholera did, even then, manifest one of the most curious of its features, namely, that of two bodies of men, apparently under similar circumstances, one shall be attacked by it, and the other shall escape.

[*Mr. Hay considers it to be endemic in Travancore.*] It would also seem, by the subjoined extracts of reports from Mr. Staff Surgeon Hay, that Cholera, in a form nowise different from the spasmodic or epidemic, is endemical in the Travancore country, and that he regarded the disease which appeared there in October, 1818, to be this endemic, rather than the epidemic, whose approach from the northward he still contemplated. On the 19th of November, 1818, Mr. Hay writes; "the Spasmodic Cholera, I am happy to say, abates; the last seven days not having afforded more than thirty-six cases at Quilon, and there has been no casualty here in that time; but the Vythians, who arrive from the country for instruction and medicines, report the deaths of almost all attacked." After acknowledging the receipt of some medical supplies, he continues, "I trust to be able to make a noble stand against the *epidemic* when it arrives; what I have had to encounter recently I hold to be the *endemic* Veshoo-ugeka, or Neer-comben, if not of the Malabars, certainly of the Travancorians, which is perfectly familiar to all here; committing frequently great mischief, and sometimes (25 years since) desolating the country. Ten thousands are said to have died of it; the Vythians fled from it as a plague, and no one who has not early succour from suitable medicines, is ever known to recover;" "the description of the Veshoo-ugeka tallies in every particular with that of the Spasmodic Cholera; and whether the epidemic reaches us or not, the country will have reason to be thankful for instruction and remedies they never might have had, unless the dangerous inroad of the epidemic had been apprehended. In May last, at Trevanderan, the capital, one hundred lives were sacrificed to this Veshoo-ugeka (poisonous air); some of the servants of the palace were seen by Mr. Provan's assistants, and saved, but the villagers around, having no assistance, died to a man." Again, on the 24th December, 1818, Mr. Hay writes: "The Neer-comben, which signifies gush of water by stool, the effect of the disease, and its synonyme Veshoo-ugeka, or poisonous air, its imputed cause, which are the vulgar and scientific designations of our present Spasmodic Cholera, has been very prevalent amongst the troops, their families and followers. In Quilon I have treated upwards of 120 under the Spasmodic Cholera, and of the inhabitants a considerably greater number, with complete success in every case where application was made within six hours; and hundreds have been saved by the use of the remedies I have distributed throughout the country. This shows unusually, for be it remembered, that to the central parts of the Travancore coast, and parts quite adjacent, so far as my reports inform me, the *endemic* has been principally confined, and it is of this I speak; but the *epidemic* also now rapidly progresses southward, having already at Cochin yielded Mr. Mather some hundreds of patients, and at Aleppy about 30 per diem are taken ill; as it nears us, I become more apprehensive that the mortality will be great, for, although medicines, with ample instructions, have been distributed to 140 Vythians and others in the country, yet, from the experience I daily have of their general inattention, I much fear that when the day of visitation and trial arrives, the sick will be found too often left to their fate, altogether unassisted." Mr. Hay goes on to state, that in some villages where there was no medical aid, from three or four to ten people were dying daily of the *endemic*; and, talking of the zeal of the Vythians, he observes, "but when the same malady (Spasmodic Cholera) was *epidemic* here 34 years since, they ran from their charge, under the persuasion that the disease was contagious, for many died, and numbers in one family."

There can be no doubt, however, that the disease described here as an endemic, was, in fact, the Epidemic Cholera of other parts; and no particular manifestation of it took place afterwards at Quilon in regular course from Cochin and Aleppy, as seemed to have been expected by the staff surgeon, nor, indeed, until July and August following. The progress of Cholera as an epidemic along the western coast, however, was much less regular than in other tracks, which may perhaps be attributed partly to the geographical peculiarities of that coast, and partly to the disease being in some degree endemic, which would not only accelerate the invasion and march of an epidemic of the same nature, but also render it difficult to fix the precise dates of its appearance.

[*Epidemic Attack of Cholera in Travancore, about 1790, and in the Ceded Districts about the same Time.*] Mr. Hay mentions, in the first letter, that Cholera committed great ravages in the Travancore country "25 years since," and in the second letter, that "it was epidemic 34 years since;" either of these dates, supposing that there was only one visitation meant, would prove the existence of Cholera, epidemically, at a period considerably ulterior to 1787, and of course anterior to the instance in the 1st battalion, 9th regiment; and the whole communication shows that the disease is at no time of rare occurrence in that country. There is a very fatal form of disease also known in Travancore, called "the red eye sickness" by the natives, which is evidently a modification of Cholera. Mr. Superintending Surgeon Duncan (page 110) also observes, "I find the old inhabitants of Bellary are acquainted with this disease, and inform me that it raged here about 30 years ago, with great violence. This was succeeded by a famine for want of inhabitants to cultivate the country."

(B.)—*Referred to page 47.*

Deaths from Cholera for the last ten years in Philadelphia.

Years.	Under 10 years of age.	Over 10 years of age.	Total.
1822	199	13	212
1823	252	13	265
1824	155	9	164
1825	197	12	209
1826	233	11	244
1827	229	10	239
1828	284	7	291
1829	239	18	257
1830	232	4	236
1831	303	17	320
	2,323	114	2,437

In the Reports of the Board of Health, from which the above statement is made, the disease in infants is usually designated by the term *Cholera Infantum*, that in adults as *Cholera Morbus*.

(C.)—*Referred to page 101.*

THE USE OF TOBACCO ENEMATA IN CHOLERA.

Case of very malignant Cholera, in which all the symptoms were well marked, cured by the administration of the tobacco enema.—Ralph Crow, ætat. 65, was taken ill about 6 o'clock in the morning of the 28th December, 1831. A medical friend invited me to see him about twelve o'clock at noon, when I happened to be in Gateshead, where the patient resided. He was at that time very ill indeed, and his condition appeared certainly hopeless. His eyes were sunk, the palpebræ black and drawn within the orbits. His nose and lips livid. Tongue white and cold; and his voice quite gone. Indeed the whisper could with difficulty be understood. The skin of the hands and fingers was much sodden, and the nails very blue. Pulsation was not to be felt at the wrist, and the surface of the whole body was completely cold. The secretion of urine was entirely suspended. He was suffering from cramps in most of the muscles. There were incessant vomiting and frequent dejection from the bowels, of pellucid fluid, mixed with flakes resembling boiled rice. I had felt desirous for a day or two to observe the effects of a moderate dose of the tobacco infusion in the form of enema, in this intractable complaint. I availed myself of this opportunity, although a formidable instance to begin with. Half a drachm of tobacco, prepared with half a pint of boiling water, was administered. This was retained in the intestines. In

a few minutes the skin became warm, and a clammy moisture was observed upon it. He vomited after it very copiously two or three times. About a quarter of an hour after giving the enema the pulsation at the wrist was evident. I cannot refrain from expressing my obligations to my medical friend in Gateshead, who was so obliging as to repeat the injection in the evening, because he observed the advantage of the practice in the morning. This he did of his own accord, as nothing passed between us respecting any repetition; the unfavourable state of the patient rendering it probable that it would not be required. It was observed at both times that as reaction took place, the colour of the integuments, and particularly the lips, became changed to a more healthy hue.

Dec. 29, 12 o'clock.—Revisited the patient, whom I found much better. The warmth and natural hue of the skin had in a great measure returned. The countenance was improved; pulsation at the wrist distinct and regular; vomiting and purging had ceased; tongue warm and less white; muscular spasms relieved, and he had enjoyed some quiet sleep. Other remedies were now exhibited to act upon the secretions, which all went on progressively improving. This man, during many days, retained the appearance of having recovered from a dreadful state of disease, but was completely restored to his strength in a few weeks.

Case of malignant Cholera, wherein Tobacco enema was administered with effect at the time, but the patient sunk afterwards.—Helen Douglas, ætat. 55, a very fat woman, whose occupation was to sit at a stall for the sale of vegetables, &c., in a confined filthy street in Newcastle, was attacked with symptoms of Cholera on the 2d January, 1832. The early symptoms were extreme, and sudden discharges from the bowels and stomach, of a fluid resembling rice-water. A medical gentleman was applied to in the night, but did not visit her. She was visited by me about ten o'clock of the following day. She was complaining of violent pain in the hypogastric, and epigastric regions, and in the back. Her countenance was very much sunk and livid. The hands and fingers sodden. The cellular substance of the arms was condensed and inelastic, resembling dead integument. The pulse was imperceptible at the wrist, but might be felt beating feebly in the carotids. She had passed no urine for some time; the body was very cold; and she suffered much from cramps and spasms in the abdominal muscles, and in those of the extremities. Her tongue was white, and nearly resembled white leather; and the breath was cold. An injection, containing half a drachm of tobacco in infusion, was immediately administered. About fifteen minutes after the injection was thrown up, pulsation became very perceptible at the wrist. Slight perspiration was observed about the central parts of the body, and the countenance became improved in appearance. She still was ejecting large quantities of fluid from the stomach. An hour and a half afterwards, she had vomited some yellow fluid mixed with white sediment. The pulsation and perspiration still continued. She was ordered to take five grains of calomel every hour.

Four o'clock, P. M.—The spasms have returned: pulse more feeble: still complains of constant pain in the abdomen. I attempted to bleed her from the arm, to unload if possible the venous circulation. By constant friction up the course of the vein, I succeeded in getting away about four ounces of very black thick blood, guttatim. Three scarifications were applied to the abdomen, but the blood stood in the incisions like tar. A common fomentation was directed to be applied over the abdomen. The tobacco enema was again exhibited, which produced a little faintness at the time, from which she soon recovered.

Nine o'clock, P. M.—Her countenance is better, but the pulse not quite so good: still suffers from cramps, although not so severe. Pain of hypogastric region and back, but it has abated in the præcordia. She has vomited very little; has felt frequent desire to empty the bowels. A small quantity of thin dark fluid was evacuated. As she had experienced much desire to pass urine, I placed my hand over the hypogastric region to ascertain the state of the bladder, and was astonished to find every thing about her wet and cold. Upon inquiry I found it was from the flannels used for fomentation, which

were absurdly left to cool since four o'clock, until I discovered them. Take castor oil.

Jan. 4.—She has had no vomiting all night. Towards morning passed two small fluid bilious stools. Continued to complain of pain in the hypogastric region. I was prevented seeing her until eleven o'clock, when I found her sinking rapidly, and she soon after expired. I had taken a catheter with me to introduce, as I understood from my assistant, who brought me the report in the morning, that she expressed a very anxious desire to pass urine. Finding her so near death I did not attempt it. The blood drawn yesterday was coagulated, very dark and devoid of serum. Other cases are given by Dr. Kirk, of the successful effects of this remedy.

(D.)—*Referred to page 104.*

[*Sketch of the Practice of three eminent and excellent Practitioners at Newcastle.*]—I shall now (says Dr. Kirk) lay before the public a short summary of what I understood to be the treatment of this disease, by a very eminent and excellent practical surgeon, Mr. John Fyfe, of Newcastle. At the time I was in Newcastle, he had attended 579 cases of Cholera; and in all these, he says that collapse never came on till after profuse serous discharge from the bowels. Mr. Fyfe relies very much on stimulating enemata; and he says that they seldom fail to produce reaction in its most salutary form, attended by less congestion than that which followed collapse of longer duration, in which stimuli had been withheld, or when the most diffusible stimuli had been given by the mouth. When watery diarrhœa exists, tinged with healthy secretions, he has arrested it often at once by opium; and in nineteen cases out of twenty, convalescence has followed. But if the disease has advanced, he then gave repeated doses of calomel: moderated the discharges by opium, and softened the pulse by bleeding, if necessary. If the disease proceeds to vomiting, purging, and cramp, Mr. Fyfe prescribes a mustard emetic, followed by copious draughts of warm water, friction, and the proper regulation of heat. If the pulse is firm, blood is taken to the extent the pulse can bear. Calomel and opium are then used, and diluents allowed. In collapse, Mr. Fyfe objects to large opiates, and also to general bleeding; but, in general, he gives relief by throwing into the intestines three pounds very hot water, six ounces of brandy, and occasionally, two drachms of laudanum. It will be frequently necessary to withdraw these injections by a tube—they come off cold—and to repeat them either with hot water alone, or with laudanum, if the irritability of the stomach continues. In this stage Mr. Fyfe uses brandy liberally. He treats the reactive fever in the same way Mr. Frost does, as stated below, and I have already alluded to some of his ingenious adaptations in my report. Mr. Fyfe thinks the period of the incubation of the morbid germ of Cholera seems to vary from four hours to eight days. Mr. Fyfe is also of opinion that the effluvia, from the excretions of an individual having diarrhœa cholica, may communicate to another predisposed, the most developed form of the disease.

Mr. Frost, of Newcastle, treated 500 cases of Cholera, and is a person of high qualifications, a calm thinker, and an excellent practitioner. I think the profession will be glad to hear his opinion and practice in the disease, which I will give as accurately as I can recollect a conversation held with that gentleman at Newburn. He said that he conceived it a malignant congestive fever,—and if English physicians had seen this disease without reading Barry, Bell, Orton, and Lefevre, they would have treated it on scientific principles, and according to the rules of British art. They would have given no astringents. The catch-word of 'stop the diarrhœa' would never have existed. He stopped it, but in a far different method, viz., by calomel, castor oil, and very minute doses of opium; say five grains calomel, one opium, and two antimonial powder to begin with, several times repeated. If there is head-ache, and giddiness, and the pulse is of sufficient tone at the commencement,—if the pulse is from eighty to a hundred, bleed moderately. But the bleeding must

be cautious; for in this, as in all cases of intestinal irritation, bleeding cannot be largely practised with safety. If the stomach is much loaded, or there is nausea, give a draught of warm water to excite vomiting. If that does not effect it, you may give salt and water, or ipecacuan, or a dose of castor oil, which may be succeeded by a diaphoretic. This will open the skin. Next day calomel and castor oil again. If the castor oil will not stay on the stomach, the best substitute is magnesia and rhubarb. If the patient gets colder, then fill the large intestines with warm water from the forcing pump; and if you have any idea that the bowels are not discharged, then put salt in the water. After this invariable stage of diarrhœa comes that of collapse. In every case where correct information could be obtained, diarrhœa has preceded it. He gives warm water to induce vomiting; injections of hot water; careful regulation of heat; twenty drops of laudanum to allay irritation; two grains of calomel, and one-sixth of a grain of opium, every three hours, for three times, and then castor oil. In one case, for instance, under this treatment, the pulse rose to eighty, and the patient became warm. Eight ounces of blood were taken from the arm. He passed no urine for forty-eight hours. Mr. Frost went on with the calomel, and next day the urine returned, and he recovered after a mild consecutive fever. He has never practised stimulation. The consecutive fever of children is almost always attended with the same symptoms as hydrocephalus acutus. The *hydrargyrus cum creta* is the best remedy for them. He has seldom been able to induce ptyalism. Worms are very frequently vomited. They are always dead. The *injestæ* of Cholera seem poisonous to them. At Newburn, a village where Mr. Frost conducted a great part of the practice, two hundred and seventy-three cases of the disease occurred up till the day on which I visited Newburn with Mr. Frost. Fifty of these cases were fatal. The whole inhabitants of the village were five hundred and fifty, one hundred and forty-one families, and one hundred and thirty-four houses. This is truly appalling. In general, even when the cold stage is incomplete, consecutive fever sets in—there is much giddiness, pain of the head, and stupor. He has always treated this stage with laxatives. Mustard sinapisms applied to the neck, relieve the head; to the epigastrium, the stomach. They have often been costive, but it has not been difficult to manage the bowels. Leeching to the head was frequently resorted to. Now, I ask the reader to compare the success of this treatment with that in the village of Hartly, where brandy and opium were used, and where, out of *thirty-four cases thirty-two died*.

I beg now to give the experience in this disease of an excellent friend, Mr. D. M'Allum. His acuteness and talents are only equalled by the excellence of his heart and the soundness of his principles.

“Dear Sir—Imperfect as naturally must be, from my limited opportunities, my capability of replying to your queries respecting Cholera; yet so far as my information can contribute, in the slightest degree, towards the furtherance of your laudable object, I am happy to afford it.

“In looking over the list of queries proposed, I do not see that my individual experience can afford any information worth recording, but upon the last, viz., the treatment found most successful. In reference to treatment, I would divide this disease into three stages. 1st, That of excitement, or irritation, wherein the patient throws or purges freely, generally accompanied by severe spasmodic action of the muscles of the legs and bowels: the pulse distinctly perceptible, quick, sharp, and in some subjects, full. This stage does not last beyond a few hours, passing on to, 2dly, The stage of collapse; wherein the pulse becomes imperceptible, the extremities cold, the breathing more laborious, the countenance more sunk, especially the eye, which assumes a leaden hue; and 3dly, the stage of reaction. He who is happy enough to be called in during the first stage, will not hesitate, if the patient have any vigour of constitution, to bleed freely, premising, or using simultaneously, a gentle emetic of ipecacuanha, or salt and water, following this by an anodyne injection. I then administer a pill of two grains of calomel, and one-sixth of a grain of opium, every half hour, with chalk mixture, or saline julap, in a state of effervescence for a few hours, until we have dejections evidently combined with bile. To assist this operation, and especially if the

vomiting be still severe, I administer warm emollient injections, and afterwards treat as in ordinary continued fever. In this stage of collapse, or approaching to it, I give a tea-spoonful of mustard in a little warm water, every five minutes, till I produce vomiting; at the same moment I order enemata of very warm water and soap, without reference to quantity, endeavouring to throw up as much as ever I can. These means I find more successful in restoring heat than any *external* means; but which I do not, nevertheless, neglect, ordering hot applications to the feet, hands, and arm-pits, and that the patient be well rubbed with a stimulating liniment of spirits of turpentine, tincture of capsicum, mixed with camphorated oil; I then apply the hot air, both which I continue at a temperature about 84, for two hours or more. In the mean time, as soon as the emetic has operated, I give six grains of calomel, one-fourth of a grain of opium, every quarter of an hour, with two table-spoonfuls of a mixture containing compound spirits of ammonia three drachms, spirits of mindererus three drachms, mixed with hot coffee, giving warm liquids very freely and frequently. In this stage I have tried bleeding repeatedly, but without benefit; indeed, it seemed to me to precipitate the fate of the patient. The enemata ought to be repeated frequently until reaction takes place. The third stage, viz., of reaction requires no difference of treatment from that of our usual typhus mitior, excepting that bleeding should be had recourse to with *very great caution*, as I believe, by its too free use in improper cases, the stage of collapse has returned, and the patient sunk. There is generally a tendency to congestion, either of the brain or liver, which requires the application of leeches and blisters. The mortality in my own practice was during the first three weeks—exactly two to one recovered,—but since January commenced I have had seven cases, most of them applying early—six of them are convalescing, and one dead. In Walls-end township, amid a population of 3000, there have hitherto occurred 15 cases and 4 deaths.

“In the above observations I have merely referred to my own individual practice, and its results. Although I have had three patients in one house, I have met with no fact that could confirm the doctrine of contagion.

“Yours, respectfully,

“D. M'ALLUM.

“*Blackett Square, Saturday, Jan. 14, 1832.*”

(E.)—*Referred to page 103.*

ON THE TREATMENT OF CHOLERA IN INDIA.

Mr. Annesley gives the following account of the way in which Epidemic Spasmodic Cholera has usually been treated under his direction* :—

“A patient is admitted into the hospital, I shall say at noon, with all the symptoms of Cholera: a vein is immediately opened, and one scruple of calomel and two grains of opium are given in the form of a pill, and washed down with the camphor draught. The body and extremities are well rubbed with dry flannels made warm, and bottles filled with hot water are applied to the feet and hands; but if the spasms are severe, spirits of turpentine are used as an embrocation. In an hour we generally perceive the effects of these remedies, and whether the disease be in any degree arrested, or be proceeding in its progress. If the former, nothing more is to be done till evening, when the calomel pill may be repeated, and an enema exhibited. The following morning the bowels should be again fully evacuated, and then the patient may be considered safe.

“When blood, however, cannot be drawn from the arm, and the spasms continue; when severe pain and burning heat are felt at the umbilicus and scorbiculis cordis, and are distressing: when the skin is cold and deluged with cold, clammy dew, and when there are oppression of the chest and difficulty of breathing, excessive pain and confusion about the head, with great intolerance of light, no pulse, or a pulse scarcely to be felt, and a cadaverous

* Diseases of India, second edition, p. 156.

smell from the body; twenty or thirty leeches should be applied immediately to the umbilicus and scorbiculis cordis, the calomel pill should be repeated, and the turpentine embrocations continued. Leeches ought likewise to be applied to the temples and base of the skull.

“When the leeches bleed freely, the application of them is always attended with decided advantage, and they should be allowed to remain till they have fulfilled their duty; after which a large blister or sinapism should be applied over the whole abdomen. Sometimes the leeches fasten but do not draw blood. In this case they should be removed immediately, and the sinapism or blister applied in their place. When the bowels are very irritable, and constantly discharging a watery fluid, small anodyne enemata, with camphor, may be given, and the *drogue amère*, a nostrum used by the Jesuits, will be then found very useful in assisting the operation of calomel, which latter should always be repeated every two hours, till three or four scruples have been taken.

“Whenever we fail in checking the disease at first, we have no resource but to treat urgent symptoms, and they must always be met with decision as they occur. The patient ought never to be left a moment without an attendant who is capable of acting according to circumstances, and who may take advantage of every change.

“An opportunity sometimes offers in the advanced stage of the disease to abstract blood: this is indicated by a struggle or effort of the circulating system to overcome some resisting power, and is a most auspicious symptom, which should never be overlooked. This reaction indicates that the constitution is making an effort to restore the circulation, but is unable to do so till assisted by the abstraction of blood, which abstraction aids in removing that oppression which it has not power of itself to overcome. This is a point in the treatment of Epidemic Cholera of the greatest importance, requiring both tact and judgment; but the change in the circulation indicating the propriety of adopting and the time of performing it should always be expected and taken advantage of as soon as it occurs.

“In this manner the treatment proceeds, sometimes with evident signs of success, at others without the least impression being made upon the disease. A very few hours, however, will frequently develop what we ought always to hope for, and even to expect, viz., a favourable change. This is always accompanied by relief from the bowels in the form of a blackish, grey, feculent, and tenacious discharge. Whenever this takes place there is hope, and the exhibition of calomel should be followed up by a smart purgative, if the stomach will receive it; if it will not, the enema should be administered and repeated till motions are procured. The purgative I have generally found to answer best at this stage of the disease, and to sit most lightly on the stomach, is the following draught:—

“R pulv. jalap. comp. ℥ss.

“Aq. menth. pip. ℥ij.

“M. ft. haust.

“And, as it is a matter of the very first consequence to act upon the bowels freely as soon as possible, if this draught have no effect in two or three hours, it should always be repeated.

“Urine is neither secreted nor passed during the continuance of the disease; whenever it appears, which it frequently does, with a full and free discharge from the bowels, the occurrence is always favourable.

“Twelve or eighteen hours generally terminate this disorder either one way or the other; but when we succeed in subduing the violence of the attack, the greatest attention and care are required to preserve the patient against the effects of that general disturbance which the constitution has suffered.

“The subsequent treatment is now to be considered; and the indication in this stage is to guard against congestion in the abdominal and thoracic viscera, and in the brain, some one of which suffers in a greater or less degree, and occasionally the whole are attacked at the same time.

“The eyes are sometimes peculiarly bright, with contracted pupils, and

there is an evident intolerance of light; yet these patients insist that they have no uneasiness in the head, and that they can look at the light with perfect ease.

“The pulse is often oppressed and labouring, notwithstanding a very large quantity of blood may have been taken during the first stage of the disease.

“These are symptoms that require immediate attention, and, when urgent, blood should be taken from the arm, but, in general, leeches will answer every purpose, and I consider them a safer remedy in this stage of the disease than general bleeding, because they appear to me to empty the capillary vessels, and aid in regulating the circulation without destroying power—a point of great importance where the constitution has already suffered so severely.

“When the patient shrinks from pressure on the abdomen, leeches should be placed over it in considerable numbers, and particularly in the neighbourhood of the liver; and when the head is affected, they should be applied at the temples and base of the skull.

“Whilst these symptoms of oppression and congestion require the most minute attention, we must not lose sight of the state of the alimentary canal, of the secretions of the small intestines, and of the alvine discharges.

“Though the irritability of the stomach sometimes continues till a very late period, yet in general it is subdued early, and that organ retains all that is taken, both as medicine and nourishment; but as the small intestines exhibit, on dissection of fatal cases, a most peculiar appearance, from the duodenum to the cœcum; as they are very much contracted in their diameter, thickened and pulpy in appearance; and as they are, when laid open, found filled with a cream-coloured, thick, viscid, and tenacious matter, exactly like old cream-cheese, which obstructs their canals; and, moreover, as this matter is to be found in every fatal case of Cholera, so it may be inferred to exist in some degree even in all that recover; and therefore the removal of it must be a primary consideration.

“Purgatives do not seem, however, to act upon this matter at first, for they merely produce watery dejections; so long, therefore, as these continue, we may be sure that all is not right, even although they be reported copious and free. The dejections should always be examined with great care; for, until the above described matter is brought away, I never consider that I have made much advancement in the cure.

“Calomel, in scruple doses, I have always found most useful in removing this peculiar secretion. Sometimes I have combined the calomel with aloes, and continued it every night and morning, till the dejections became of a blackish grey colour, substantial and tenacious. The purging draught and the enema were then had recourse to, with the best effects.

“This practice was followed up regularly every day with leeches, blisters, &c. &c., according to circumstances. In a day or two the motions were usually observed to become dark green, which colour always indicated an approach to healthy action. The calomel and purging draughts were still continued, however, five or six days longer, till the dejections became more natural, and a visible improvement was observed in the appearance of the patient. He was then put upon an alterative course of medicine for a month or more, according to circumstances. This latter measure is absolutely necessary to prevent a relapse, which is very common, and always dangerous.

“This plan of treating the Epidemic Cholera, which was adopted in the general hospital at Madras, under my charge, during the prevalence of that disease from 1819 to 1823, was attended with a success that certainly far exceeded my expectations.”

(F.)—*Referred to page 104.*

TREATMENT OF THE CHOLERA IN PARIS.

The subject which we approach with the greatest reluctance, (say Drs. Penock and Gerhard, in their “Observations on the Cholera of Paris,”) from the extreme difficulty which it offers, is that of the treatment; this difficulty de-

pend upon the little power which our remedial agents possess of opposing this disease, and still more the necessity of constantly varying the means employed, and the degree of activity in their use, according to the diversified stages which Cholera presents. In the diarrhœa, which may either be a precursor of Cholera, or merely a slighter action of the morbid cause, the treatment should only differ in energy from that employed in ordinary seasons against a similar affection. In the mildest form there is no nausea or excitement of the pulse, or pain in the abdomen; the only inconvenience experienced in the borborygmi and the liquid discharges; here the abstinence from food should be immediate, or the diet limited to light broths; this diet alone, or with a moderate dose of opium, will generally arrest the symptoms. The same diarrhœa assuming a severe form, has received the appellation of choleric at Paris; the dejections are more frequent, and often attended with pain; the pulse usually a little excited, with general feeling of uneasiness or vertigo. The diet should be as rigid as in the last mentioned instance, but the febrile excitement should be reduced by bleeding, and leeches if any local pain exist; to these depletory means a warm bath may be added, provided a bath can be placed close to the bedside of the patient, and be given without the slightest , the bath is usually followed by profuse perspiration, and with salutary effects, as the authors can attest from their personal experience. Should the discharges be still abundant, they should be checked with opium, and if the mercurials possess any efficacy in changing the course of Cholera, theoretically we should advise their administration at this point, practically we know nothing of their action in this epidemic. External stimulants, as sinapisms, must be used at the discretion of the practitioner, the ordinary rules for their application directing his prescriptions. The symptoms combated by these means do not yet constitute the Cholera, they are but the prodromus, but the most useful and interesting moment for the practitioner is that of anticipation and prevention rather than cure. After the diarrhœa has continued for some time, the commencement of the formal Cholera is announced by the vomiting and cramps, which are not at first attended by the alteration of the voice, or the blueness and coldness of surface. The symptoms are now the most urgent, and require the most vigorous treatment, blood-letting is advisable if the pulse be not *much* depressed, and should be carried as far as the strength of the patient permit it, the effects of it in the cases with which we are familiar was happy; unfortunately our number is necessarily limited, for the patient in hospitals are rarely seen at the most favourable moment for treatment. Use should be made of the *hot*, (not the warm,) bath, at 104° Fahr. as practised by M. Rostan, and external stimulants; should *no* pain at the epigastrium exist, other than the colics, which are diminished by pressure, an emetic of ipecacuanha may be administered with great advantage. M. Andral was much pleased with its administration at La Pitié, and we know that during the existence of the Cholera at Vienna, the treatment by ipecacuanha was regarded as the most effectual. It may generally be given without fear for the most careful examinations have proved that the inflammatory appearance of the stomach was more frequently found at the termination than during the most violent period of the disease, and at the beginning, our object is to change by a sudden impression the derangement not of one but of the whole systems of organs. The cramps are most readily relieved by smart frictions, which are more effectual than compression by tourniquets as tried at one of the hospitals; the frictions should be kept up with perseverance until the patient is relieved. Should the blue cold stage come on in spite of the most vigorous treatment, we must not think of pursuing further the depletion; it was imagined that the profound prostration was due to the congestion of the internal organs which impeded the action of the whole machine, but the attempts at blood-letting, which could only be performed by the aid of hot applications to the arms, caused a temporary flutter of the pulse, followed by a more rapid extinction of life. The treatment is the most simple possible, for it is not with the intention of curing the disease itself, but of preserving life, that we must stimulate; frictions with warm liniments should be almost incessant, and made from the extremities towards the central organs; sinapisms to the

extremities; and particularly a liniment of ammonia and turpentine, which is applied along the spine by flannels impregnated with it, a hot smoothing-iron is then to be passed rapidly along its whole length. This application was employed by M. Petit, of the Hôtel-Dieu, and with great advantage. Dry heat is preferable to moist, hence resort is had to sand-bags, hot cloths, or still better, to the introduction of heated air beneath the bed-clothes by a tube communicating with a small furnace.

The question of internal stimulants has been much discussed, we regard them as improper in themselves, but sometimes their employment becomes necessary, but only for the immediate necessity of preserving life, and as soon as a moderate degree of reaction is produced, they should be discontinued. The diarrhœa in the cold stage, and that immediately preceding it, should be combated by opiate injections alone, or with a preparation of rhatania; but if these injections succeed in their effect and are not discharged, their influence if continued is injurious, and tends to aid in producing the internal congestions to which the patient is exposed by his extreme feebleness. The vomiting is best allayed by Seltzer water given simply, or with a mucilaginous syrup, or if not extremely disagreeable to the patient, ice in substance, or iced water in very small portions.

The following notice of the Cholera, at Montreal, already published in the newspapers, merits a place here, to complete our history of the Cholera.

"The medical commission appointed by the sanitary committee to visit Canada, for the purpose of making investigations concerning the epidemic disease prevailing there, in anticipation of a more detailed report, which will be laid before the committee in a few days, present the following general conclusions they have formed as the result of their observations, which they flatter themselves will tend to allay the public anxiety.

"1st. The disease so lately an epidemic in Montreal and Quebec, and which now prevails in the city of New York, and is extending throughout the country, is Malignant Cholera, the same that has ravaged and spread its devastations over Europe, under the name of Asiatic and Spasmodic Cholera.

"2d. That they have not been able to ascertain any positive unequivocal fact to justify a belief that it is a disease communicated by those affected with it, or is one of importation.

"3d. That during the prevalence of the epidemic constitution or influence, a general predisposition exists in the whole community, from which very few individuals are exempt, productive of a liability to the disease.

"4th. That this predisposition is manifested by embarrassed and difficult digestion, sense of heat, fulness, uneasiness or pain in the abdomen, irregularity of bowels, a furred and pasty tongue, with frequency of cramps or constrictions in the muscles of the extremities, especially at night.

"5th. That this state of predisposition will not give rise to an attack of the disease, without the application of an exciting cause.

"6th. That the exciting causes of the disease are moral excitants, especially fear and anger; intemperance in the use of fermented and spirituous liquours, or in eating, overloading the stomach; acid drinks, or large draughts of cold water; the use of crude indigestible food, whether animal or vegetable, particularly the latter; excessive exertion or fatigue in the heat of the day; exposure to the night air, sitting in currents of air, and particularly sleeping with too light covering, and with the windows raised, except the rooms are very small and confined. Most of the attacks occur in the night, from 11 or 12 o'clock to 3 or four in the morning.

"7th. That prudence in living during the epidemic period, which continues from six weeks to three months, the wearing of flannel, particularly on the body, keeping the feet warm and dry, the avoidance of improper food and drinks, tranquillity of mind and body, are almost certain guaranties against the assaults of the disease, and disarm the pestilence of its malignity.

"8th. That the disease, when abandoned to its course, passes through dif-

ferent stages, in all of which it is easily controlled, except one—the cold stage, or period of collapse, and which is in almost every instance, preceded by the symptoms of the forming stage, when the disease, if timely treated, is arrested with facility.

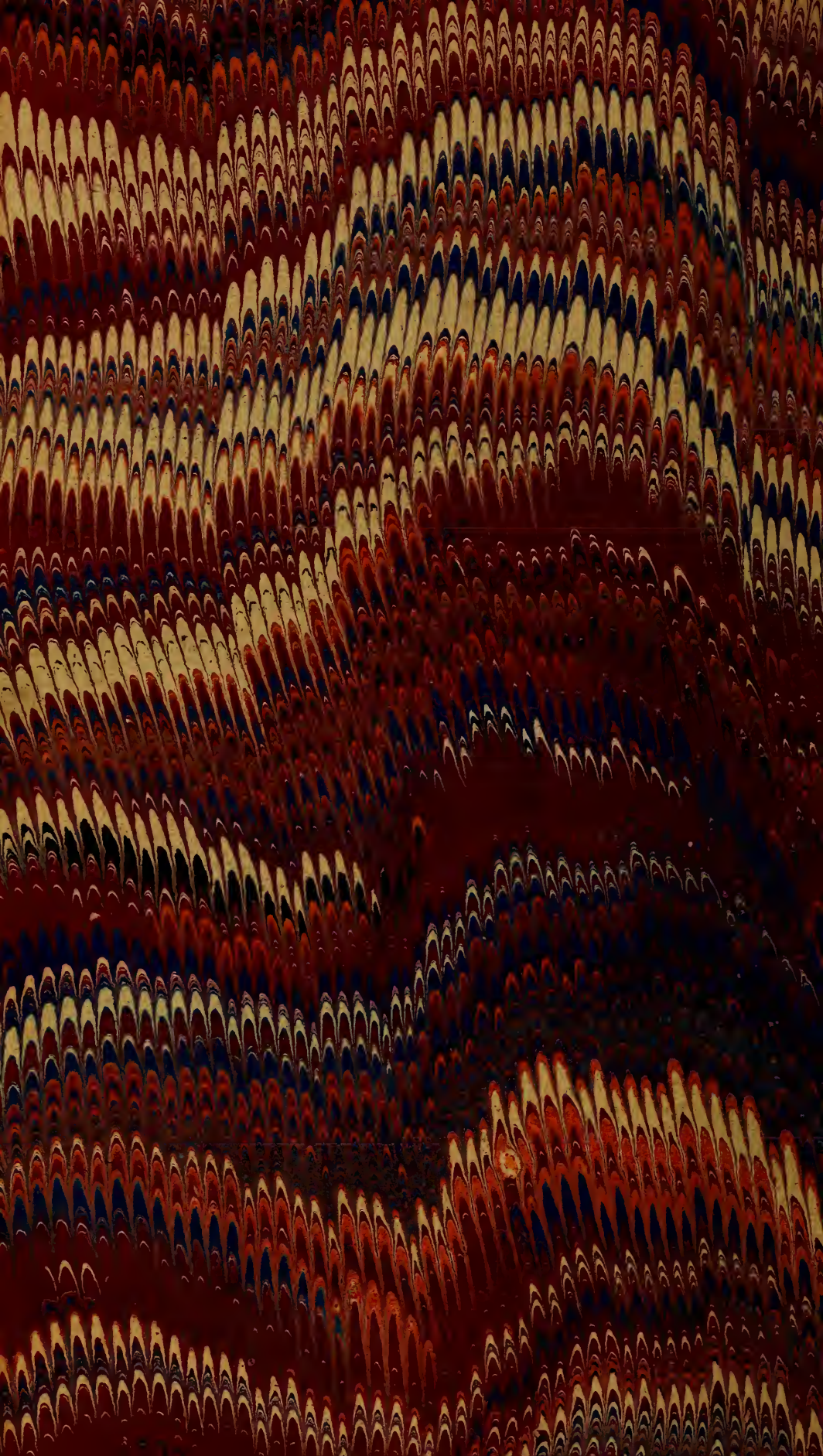
“9th. That the symptoms of this forming stage should be generally promulgated, and persons instructed of the necessity of an immediate attention to them. It is ignorance in this respect, amongst the labouring and lower classes of society, and their habits of life, leading to indifference and inattention, that plunges so many, belonging to those conditions, in the desperate situation so frequently met with, when medical aid and human skill are utterly unavailing. Those symptoms are, a sudden looseness of the bowels, the discharges becoming thin, watery, and colourless, or whitish, with little odour—vertigo or dizziness—nausea, oppression, pain and cramps of the stomach, with retching and vomiting of a fluid, generally resembling dirty river water, attended or soon followed by cramps of the extremities, particularly of the legs and thighs.

“10th. When the foregoing symptoms appear, application for remedial assistance must be made immediately. The delay of an hour may usher in the cold stage, or period of exanimated prostration and collapse, from which it is almost impossible to resuscitate the expiring energies of the economy.

“11th. That every preparation should be made by the public authorities, in anticipation of the appearance of the disease, providing the means of treatment for those who cannot command them, so that aid may be promptly administered to all, the moment of attack. These means are a number of small hospitals, or houses of receptions, in various parts of the city; stations where nurses, physicians, and students, with suitable medicines and apparatus, can be procured in the night without delay, the evacuation of certain localities, where the occurrence of numerous cases indicates a pestiferous influence, and the furnishing to the poor, as far as practicable, wholesome and nourishing food.

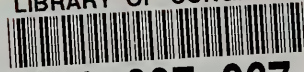
By the adoption and observance of the foregoing means of precaution and prevention, in addition to the sanitive measures already adopted, the commission are convinced that the prevalence of the disease will be greatly circumscribed, its mortality diminished, and the public guarded against panic and alarm, the great sources of danger—and under the blessing of Divine Providence, the pestilence will be shorn of its terrors, and mitigated in its destructive fury.

SAMUEL JACKSON,
CHAS. D. MEIGS,
RICHARD HARLAN.





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